Department of Design and Construction

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

SINGLE PLA CONTRACT 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:
https://www1.nyc.gov/site/mocs/systems/passport-user-materials.page

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 MAY 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

Project Labor Agreement & Single Contract

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

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

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

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

Pre Bid Questions (PBQs)

Please be advised that PBQs should be submitted to the Agency Contact Person (CSB_projectinquiries@ddc.nyc.gov) 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 https://www1.nyc.gov/nycbusiness/article/contract-financing-loan-fund

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 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 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 subcontractors; the names, addresses and contact numbers of each MBE or WBE hired as a subcontractor by the Contractor, and, where applicable, hired by any of the Contractor's direct subcontractors; and the dates and amounts paid to each MBE or WBE. The Contractor shall also submit, along with its voucher for final payment: the total amount it paid to subcontractors, and, where applicable pursuant to Section 6-129(j), the total amount its direct subcontractors paid directly to their indirect subcontractors; and a final list, certified under penalty of perjury, which shall include the name, address and contact information of each subcontractor that is an MBE or WBE, the work performed by, and the dates and amounts paid to each.

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

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

10. Pre-award waiver of **the Participation Goals**.

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

(b) To apply for a full or partial waiver of the **Participation Goals**, a bidder, proposer, or contractor, as applicable, must complete Part 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 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 to, whether the bidder, proposer or contractor, as applicable, has the capacity and the bona fide intention to perform the Contract without any subcontracting, or to perform the Contract without awarding the amount of subcontracts represented by the **Participation Goals**. In making such determination, Agency may consider whether the **M/WBE** Utilization Plan is consistent with past subcontracting practices of the bidder, proposer or contractor, as applicable, whether the bidder, proposer or contractor, as applicable, has made efforts to form a joint venture with a certified firm, and whether the bidder, proposer, or contractor, as applicable, has made good faith efforts to identify other portions of the Contract that it intends to subcontract.

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

(i) The Contractor advertised opportunities to participate in the Contract, where appropriate, in general circulation media, trade and professional association publications and small business media, and publications of minority and women's business organizations;

(ii) The Contractor provided notice of specific opportunities to participate in the Contract, in a timely manner, to minority and women's business organizations;

(iii) The Contractor sent written notices, by certified mail or facsimile, in a timely manner, to advise MBEs or WBEs that their interest in the Contract was solicited;

(iv) The Contractor made efforts to identify portions of the work that could be substituted for portions originally designated for participation by MBEs and/or WBEs in the **M/WBE** Utilization Plan, and for which the Contractor claims an inability to retain MBEs or WBEs;

(v) The Contractor held meetings with MBEs and/or WBEs prior to the date their bids or proposals were due, for the purpose of explaining in detail the scope and requirements of the work for which their bids or proposals were solicited;

(vi) The Contractor made efforts to negotiate with MBEs and/or WBEs as relevant to perform specific subcontracts, or act as suppliers or service providers;

(vii) Timely written requests for assistance made by the Contractor to Agency's M/WBE liaison officer and to DSBS;

(viii) Description of how recommendations made by DSBS and Agency were acted upon and an explanation of why action upon such recommendations did not lead to the desired level of participation of MBEs and/or WBEs.

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

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

12. If 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.

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 Commissioner may require, including without limitation, an explanation or justification for specific unit price items.

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

BID SUBMISSION FORM

Bidder Name:	**APS ELECTRIC, INC.**
Procurement Title:	85022B0017-E17-0001 – Lefkowitz Building Lighting & HVAC Upgrade
RFx Name:	85022B0017-E17-0001 - Lefkowitz Building Lighting & HVAC Upgrade

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)	$ **6,962,000.00**
+ All Allowances (Allowances Item Grid)	$ **15,000.00**
= Total Bid Price: (a/k/a Total Proposal Amount)	$ **6,977,000.00**

BB 12/8/21

Bidder Signature

EIN (if applicable): **04-3758900**
(EIN must match the EIN of the entity that submitted bid information in PASSPort)

Bidder Name: **APS ELECTRIC, INC.**

By: **MIKHAIL MIKHAYLOV, PRESIDENT**
(Name of Partner of Corporate Officer)

Signature: _____
(Signature of Partner of Corporate Officer)

CONTRACTOR'S DETAILED BID BREAKDOWN FORM

Project ID: E17-0001

Hard Cost Estimate (Level 2)

Project Name: Lighting & HVAC Energy Efficiency Upgrades - Louis J. Lefkowitz Building

Name of the Bidder:

No.	Sub Work (*)	CSI Division:	CSI Sub Division:	RSMeans 12-digit item code:	Vendor Quote (Yes/ No)	Description:	Qty	Unit:	Total Cost of Material $:	Total Cost of Labor $:	Total Cost of Equipment $:	Grand total of Material,Labor & Eqp.$:
		DIVISION 01 - GENERAL REQUIREMENTS										
						General Requirements: (for details see tab "HardCostGeneralRequirements" at Division 1 General Requirements sheet)	1.00	JOB				$ 791,790.00
						SUB TOTAL						**$ 791,790.00**
		DIVISION 03 - CONCRETE										
			03 30 00 Cast-in-Place Concrete									
						6" Equipment concrete pads	-	SF				$ -
						Concrete pad - reinforced - 6" high - 7' - 6" x 4' - 6"	1.00	JOB	$ 5,000.00	$ 10,000.00		$ 15,000.00
						SUB TOTAL			**$ 5,000.00**	**$ 10,000.00**		**$ 15,000.00**
		DIVISION 22 - PLUMBING										
			22 05 00 Common Work Results for Plumbing									
						Remove existing house tank pump with assoc. controls - 3" piping	3.00	EA	$ 2,500.00	$ 2,500.00		$ 5,000.00
						Remove existing local CW piping	3.00	SET	$ 1,500.00	$ 1,500.00		$ 3,000.00
						Remove concrete pads	3.00	EA	$ 1,000.00	$ 1,000.00		$ 2,000.00
						Remove tank controls	1.00	JOB	$ 1,000.00	$ 1,000.00		$ 2,000.00
						Cut and cap pipe	1.00	EA	$ 3,000.00	$ 3,000.00		$ 6,000.00
						Carting and disposal - pumps and piping	1.00	JOB	$ 1,000.00	$ 1,000.00		$ 2,000.00
						Hoisting - setting of pump set - rigging	1.00	JOB	$ 8,000.00	$ 3,000.00		$ 11,000.00
						Core drill, cutting, patching, fire stopping (including shaft opening)	1.00	JOB	$ 6,000.00	$ 4,000.00		$ 10,000.00
						Protection - clean-up - disposal	1.00	JOB	$ 5,000.00	$ 5,000.00		$ 10,000.00
						Shop co-ordination drawings	1.00	JOB	$ 3,000.00	$ 2,000.00		$ 5,000.00
						Coordination with other trades	1.00	JOB	$ 3,000.00	$ 3,000.00		$ 6,000.00
						New pump control panel - basement Starters - alarm devices, alarms remote alarm - signal - digital	1.00	EA	$ 15,000.00	$ 5,000.00		$ 20,000.00
						Tank controls - ref. dwg. P-301.00	1.00	JOB	$ 1,500.00	$ 1,500.00		$ 3,000.00

						Temporary provisions for continuous service to house tank at all times	1.00	JOB	$ 2,000.00	$ 2,000.00		$ 4,000.00
						Fire watch allowance	1.00	JOB	$ 1,500.00	$ 1,500.00		$ 3,000.00
						Piping to heat recovery unit Sch. 40 CS, Blk. - welded 4" Pipe size	1.00	LF	$ 1,000.00	$ 4,000.00		$ 5,000.00
						Pipe / valving at H.R. unit with by-pass	1.00	SET	$ 1,000.00	$ 3,000.00		$ 4,000.00
						1 1/2" Pipe insulation - existing piping	-	LF				$ -
						Piping to Triplex Pump Set L' Copper Brazed 6" Pipe size	50.00	LF	$ 10,000.00	$ 15,000.00		$ 25,000.00
						Piping to Triplex Pump Set L' Copper Brazed 3" Pipe size	210.00	LF	$ 16,800.00	$ 25,200.00		$ 42,000.00
			22 05 23 General-Duty Valves for Plumbing Piping									
						3" valve	7.00	EA	$ 7,000.00	$ 5,400.00		$ 12,400.00
						3" Check	5.00	EA	$ 5,000.00	$ 4,000.00		$ 9,000.00
						Piping local ti triplex pump set - 3" size	1.00	SET	$ 3,000.00	$ 7,000.00		$ 10,000.00
			22 05 53 Identification for Plumbing Piping and Equipment									
						System ID / Valve tags	1.00	JOB	$ 1,500.00	$ 1,500.00		$ 3,000.00
			22 05 29 Hangers and Supports for Plumbing Piping and Equipment									
						Flexible Connection	1.00	EA	$ 1,000.00	$ 1,000.00		$ 2,000.00
			22 05 48 Vibration and Seismic Controls for Plumbing Piping and Equipment									
						Concrete pad - reinforced - 6" high - 7' - 6" x 4' - 6"	-	EA				$ -
			22 07 00 Plumbing Insulation									
						8" dia pipe insulation	-	LF				$ -
			22 08 00 Commissioning of Plumbing									
						Tests of piping - pressure	1.00	JOB	$ 2,000.00	$ 3,000.00		$ 5,000.00
						New tank controls - float - probes - wiring within tank	1.00	JOB	$ 3,000.00	$ 3,000.00		$ 6,000.00
						Verify operation of controls	1.00	JOB	$ 1,000.00	$ 2,000.00		$ 3,000.00
			22 10 00 Plumbing Piping									
						Tie-in 8" dia pipe	1.00	EA	$ 3,000.00	$ 7,000.00		$ 10,000.00
			22 11 16 Domestic Water Piping									
						4" Gate valve at existing tap	4.00	EA	$ 8,000.00	$ 8,000.00		$ 16,000.00
						4" Pipe insulation - existing piping	-	LF				$ -
			22 11 19 Domestic Water Piping Specialties									
						8" dia pipe (Brazed - Copper) / fittings / supports	5.00	LF	$ 5,000.00	$ 5,000.00		$ 10,000.00
			22 11 23 Domestic Water Pumps									
						Packaged triplex house tank pumping set - 150 gpm, 15.0 hp (each)	1.00	SET	$ 10,000.00	$ 8,000.00		$ 18,000.00

						Pump control panel	1.00	EA	$ 5,000.00	$ 2,000.00		$ 7,000.00
						Concrete inertia pad with isolator springs - Dwg. P - 401.00	1.00	SET	$ 2,000.00	$ 3,000.00		$ 5,000.00
		copy above cell and insert copied cell above the row										
						SUB TOTAL			**$ 140,300.00**	**$ 144,100.00**		**$ 284,400.00**
		DIVISION 23 - HEATING, VENTILATING, AND AIR CONDITIONING (HVAC)										
			23 05 00 Common Work Results for HVAC									
						Remove existing motor and belts @ EF-1 (9th floor)	1.00	EA	$ 1,500.00	$ 3,000.00		$ 4,500.00
						Remove existing motor and belts @ EF-2 (9th floor)	1.00	EA	$ 1,500.00	$ 3,000.00		$ 4,500.00
						Remove existing motor, belts, pulleys @ AHU-PS-1 (Printshop)	1.00	EA	$ 1,500.00	$ 3,000.00		$ 4,500.00
						Remove existing duplex vacuum pump, incl. receiver tank, assoc. piping, cut and cap pipe, Carting and disposal	1.00	SET	$ 1,500.00	$ 4,500.00		$ 6,000.00
						Other - Remove fan starters - related wiring	-	EA				$ -
						Concrete pad @ Duplex vacuum pump	1.00	EA	$ 1,000.00	$ 1,000.00		$ 2,000.00
						Shop co-ordination drawings	1.00	JOB	$ 2,000.00	$ 3,000.00		$ 5,000.00
						Core drill, cutting, patching, fire stopping	1.00	JOB				$ -
						Coordination with other trades	1.00	JOB	$ 2,000.00	$ 3,000.00		$ 5,000.00
			23 05 13 Common Motor Requirements for HVAC Equipment									
						Provide new motor (5 hp) and belts @ EF-1 (9th floor) - 10,800 CFM fan	1.00	SET	$ 1,500.00	$ 3,000.00		$ 4,500.00
						Provide new motor (5 hp) and belts @ EF-2 (9th floor) - 10,800 CFM fan	1.00	SET	$ 1,500.00	$ 3,000.00		$ 4,500.00
						VFD (5 hp) @ EF-1, EF-2 - furnish only - delivery to fan room	1.00	EA	$ 1,250.00	$ 2,000.00		$ 3,250.00
						Provide new motor (7.5 hp), belts, pulleys and etc. @ AHU-PS-1 (Printshop)	1.00	SET	$ 2,000.00	$ 3,500.00		$ 5,500.00
						VFD @ AHU-PS-1 - furnish only	1.00	EA	$ 1,250.00	$ 2,000.00		$ 3,250.00
						Provide time clock device @ EF-1 & EF-2	2.00	EA	$ 2,000.00	$ 2,000.00		$ 4,000.00
			23 05 19 Meters and Gages for HVAC Piping									
						Misc. valves and specialties - allowance	-	JOB				$ -
			23 05 23 General-Duty Valves for HVAC Piping									
						8" Gate valve	2.00	EA	$ 3,500.00	$ 4,000.00		$ 7,500.00
						8" Check valve	3.00	EA	$ 2,500.00	$ 3,000.00		$ 5,500.00
			23 05 48 Vibration and Seismic Controls for HVAC									
						Equipment handling and material distribution	1.00	JOB	$ 1,500.00	$ 2,500.00		$ 4,000.00
			23 05 53 Identification for HVAC Piping and Equipment									
						System ID / Valve tags	1.00	JOB	$ 1,500.00	$ 2,000.00		$ 3,500.00
			23 05 93 Testing, Adjusting, and Balancing for HVAC									

						Toilet exhaust fans EF-1, EF-2 (incl. charts of readings)	1.00	EA	$ 900.00	$ 900.00		$ 1,800.00
						Verify exhaust cfm - adjust as required @ Restrooms (19 rooms, 2 grilles each room)	1.00	EA	$ 900.00	$ 900.00		$ 1,800.00
						Prob and verify cfm at risers (North & South 9th level) @ Toilet exhaust fans	1.00	EA	$ 900.00	$ 900.00		$ 1,800.00
						Air balance and reports @ Printshop	1.00	JOB	$ 900.00	$ 900.00		$ 1,800.00
						Provide air readings at diffusers @ Printshop (incl. above)	1.00	EA	$ 900.00	$ 900.00		$ 1,800.00
						Scope all piping - for leaking condition @ Basement	1.00	SYST	$ 900.00	$ 900.00		$ 1,800.00
						Inspect water samples - treatment - lab @ Basement	1.00	SYST	$ 900.00	$ 900.00		$ 1,800.00
						Check pump operation and gpm @ Basement	1.00	EA	$ 900.00	$ 900.00		$ 1,800.00
						Check automatic valve operation @ Basement	1.00	EA	$ 900.00	$ 900.00		$ 1,800.00
						Temperatures and static pressure @ Basement	1.00	EA	$ 900.00	$ 900.00		$ 1,800.00
						Coil temperature and pressure drops @ Basement	1.00	EA	$ 900.00	$ 900.00		$ 1,800.00
						Flow rates @ coils @ Basement	1.00	EA	$ 900.00	$ 900.00		$ 1,800.00
						Pump - operation and readings @ Basement	1.00	EA	$ 900.00	$ 900.00		$ 1,800.00
						Check & record - flow rates with flow meters @ Basement	1.00	EA	$ 900.00	$ 900.00		$ 1,800.00
						Test & balance (directed, gpm, pressures at all control valves, etc.) @ Basement's piping system	1.00	JOB	$ 900.00	$ 900.00		$ 1,800.00
			23 07 16 HVAC Equipment Insulation									
						8" dia pipe insulation	-	LF				$ -
			23 07 19 HVAC Piping Insulation									
						3" dia pipe insulation	-	LF				$ -
			23 08 00 Commissioning of HVAC									
						System start-up / Commissioning	1.00	JOB	$ 3,000.00	$ 5,000.00		$ 8,000.00
			23 09 00 Instrumentation and Control for HVAC									
						Air handling unit AHU-PS-1 @ Printshop	-	EA				$ -
						Fan coil units FCU-1, 2, 3, 4 @ Printshop	-	EA				$ -
						Chiller ACCH-PS-1 @ Printshop	-	EA				$ -
						Exhaust fans EF-PS-1, EF-PS-2 @ Printshop	-	EA				$ -
						Pumps P-PS-1, P-PS-2 @ Printshop	-	EA				$ -
						Provide exterior monitoring @ Printshop	-	JOB				$ -
						Therostat & humidity @ Printshop	-	JOB				$ -

						Verify operation of all devices @ Printshop	1.00	SYST	$ 1,000.00	$ 1,000.00		$ 2,000.00
						Test reports - all equipment @ Printshop	1.00	SYST	$ 1,000.00	$ 2,000.00		$ 3,000.00
						Verify smoke and fire damper operation @ Printshop	-	JOB				$ -
						Therostat & humidity @ Printshop	-	EA				$ -
						Remove and provide new steam control valve @ Printshop	1.00	EA	$ 1,500.00	$ 3,500.00		$ 5,000.00
						Local control panels	-	EA				$ -
						New BMS work stations	-	JOB				$ -
						Software and programming	-	JOB				$ -
						Misc. thermostats and sensors	-	JOB				$ -
						LV wiring	-	JOB				$ -
						Upgrate exist. DDC CMNET network WEBCTRL software license and ADD new controllers	-	JOB				$ -
						Integrate new controllers to existing system	-	JOB				$ -
						Misc. system control requirements	1.00	JOB	$ 100,000.00	$ 92,000.00		$ 192,000.00
						Progress inspections - P.E.	-	JOB				$ -
						Commissioning of all systems - start-ups	1.00	JOB	$ 2,500.00	$ 2,500.00		$ 5,000.00
						Provide reports and labeled drawings with all data and information - reports & recommendations for possible future work to be provided	1.00	JOB	$ 1,500.00	$ 2,500.00		$ 4,000.00
			23 09 93 Sequence of Operations for HVAC Controls									
						Heat exchanger CRHX-1, incl. hook-up	1.00	EA	$ 7,500.00	$ 5,000.00		$ 12,500.00
			23 21 16 Hydronic Piping Specialties									
						Inspect expansion tank - condition @ Basement	1.00	EA	$ 500.00	$ 1,500.00		$ 2,000.00
						Modify - 2" vent - 3" pump discharge at existing condensate pump - incl. electrical Remove 8" LPR pipe & valving	1.00	JOB	$ 1,500.00	$ 3,500.00		$ 5,000.00
			23 22 00 Steam and Condensate Piping and Pumps									
						Remove and replace steam trap @ Steam humidifier (Printshop)	5.00	EA	$ 1,000.00	$ 4,000.00		$ 5,000.00
						Remove 4" P.D. pipe - cap sanitary	5.00	LF	$ 625.00	$ 1,250.00		$ 1,875.00
			23 22 13 Steam and Condensate Heating Piping									
						Sch. 40 CS./Blk. Welded 8" Pipe size LPR	5.00	LF	$ 1,000.00	$ 4,000.00		$ 5,000.00
			23 22 16 Steam and Condensate Heating Piping Specialties									
						Sch. 40 CS./Blk. Welded 3" Pipe size P.D. - 2" @ pumps	110.00	LF	$ 16,500.00	$ 33,000.00		$ 49,500.00
						Sch. 40 CS./Blk. Welded 3" Pipe size LPR	50.00	LF	$ 7,500.00	$ 15,000.00		$ 22,500.00
			23 22 23 Steam Condensate Pumps									

						Vacuum Pump- VAC-1 Duplex sets Water pumps - 63 GPM - 5.0 HP Vacuum pumps - 5 1/2" vac. - 5.0 HP 209 Receiver tank - 10,000 lbs. + / - Pre-wired - all controls	1.00	SET	$ 15,000.00	$ 10,000.00		$ 25,000.00
			23 31 13 Metal Ducts										
						New equipment and cabling - Dwg. M-402	-	JOB				$ -
			23 57 00 Heat Exchangers for HVAC										
						Concrete pad @ CRHX - 1	1.00	EA	$ 1,000.00	$ 1,000.00		$ 2,000.00
		copy above cell and insert copied cell above the row											
						SUB TOTAL			**$ 205,625.00**	**$ 247,750.00**		**$ 453,375.00**
		DIVISION 26 - ELECTRICAL											
			26 05 00 Common Work Results for Electrical										
						Disconnect/remove existing lighting fixture	3,811.00	EA	$ 38,110.00	$ 571,650.00		$ 609,760.00
						Disconnect/remove existing toggle switch	959.00	EA	$ 9,590.00	$ 124,670.00		$ 134,260.00
			26 05 19 Low-Voltage Electrical Power Conductors and Cables										
						Control panel - F.B.O.	1.00	EA		$ 1,000.00		$ 1,000.00
						Re-connect power to replaced motors	3.00	EA	$ 900.00	$ 2,000.00		$ 2,900.00
						Duplex vacuum pump (5HP)	1.00	EA	$ 300.00	$ 1,000.00		$ 1,300.00
						Triplex house pump (15HP)	1.00	EA	$ 300.00	$ 1,000.00		$ 1,300.00
						3/4" conduit; triplex pump	10.00	LF	$ 500.00	$ 1,000.00		$ 1,500.00
						# 10 wire; triplex pump	40.00	LF	$ 200.00	$ 600.00		$ 800.00
						# 12 wire; triplex pump	40.00	LF	$ 200.00	$ 600.00		$ 800.00
						Control wiring (from pump to existink tank)	1.00	JOB	$ 1,000.00	$ 2,500.00		$ 3,500.00
						Cutting/patching	1.00	JOB	$ 2,000.00	$ 2,000.00		$ 4,000.00
						Remove control panel	1.00	EA	$ 100.00	$ 500.00		$ 600.00
						Disconnect power connection to air handling unit, identify, intercept, tag and protect branch circuitry for reuse	1.00	EA	$ 100.00	$ 500.00		$ 600.00
						Disconnect power connection to fan, identify, intercept, tag and protect branch circuitry for reuse	1.00	EA	$ 100.00	$ 500.00		$ 600.00
						Re-connect existing homeruns	1.00	EA	$ 100.00	$ 500.00		$ 600.00
			26 05 26 Grounding and Bonding for Electrical Systems										
						Disconnect power connection tohouse pump, identify, intercept, tag and protect branch circuitry for reuse	1.00	EA	$ 1,000.00	$ 1,000.00		$ 2,000.00
			26 05 29 Hangers and Supports for Electrical Systems										
						Sleeves/firestopping (electrical riser)	1.00	JOB	$ 5,000.00	$ 5,000.00		$ 10,000.00
			26 05 53 Identification for Electrical Systems										
						Miscellaneous mechanical work	1.00	JOB	$ 1,000.00	$ 1,000.00		$ 2,000.00
			26 08 00 Commissioning of Electrical Systems										
						Testing	1.00	EA	$ 1,000.00	$ 4,000.00		$ 5,000.00

			26 27 26 Wiring Devices										
						Wireless 4-position LV switch, wall mounted	939.00	EA	$ 469,500.00	$ 234,750.00		$ 704,250.00
						Single pole light switch, key operated, wall mounted	28.00	EA	$ 14,000.00	$ 8,400.00		$ 22,400.00
						Re-connect existing homeruns	-	EA				$ -
						3/4" conduit; extend ex. Home runs	-	LF				$ -
						# 12 wire; extend ex. Home runs	-	LF				$ -
						Testing	1.00	JOB	$ 3,000.00	$ 7,000.00		$ 10,000.00
			26 28 16 Enclosed Switches and Circuit Breakers										
						Disconnect switch @ duplex vacuum pump	1.00	EA	$ 500.00	$ 1,000.00		$ 1,500.00
			26 29 23 Variable-Frequency Motor Controllers										
						VFD (fract.) - F.B.O.	1.00	EA		$ 500.00		$ 500.00
			26 51 00 Interior Lighting										
						Lighting fixture type "A" w/sensor module	176.00	EA	$ 105,600.00	$ 105,600.00		$ 211,200.00
						Lighting fixture type "A"	630.00	EA	$ 352,800.00	$ 352,800.00		$ 705,600.00
						Lighting fixture type "B1" w/sensor module	83.00	EA	$ 48,555.00	$ 37,350.00		$ 85,905.00
						Lighting fixture type "B1"	241.00	EA	$ 126,525.00	$ 108,450.00		$ 234,975.00
						Lighting fixture type "B2" w/sensor module	13.00	EA	$ 8,125.00	$ 5,850.00		$ 13,975.00
						Lighting fixture type "B2"	7.00	EA	$ 4,375.00	$ 3,150.00		$ 7,525.00
						Lighting fixture type "C1" w/sensor module	164.00	EA	$ 98,400.00	$ 89,000.00		$ 187,400.00
						Lighting fixture type "C1"	168.00	EA	$ 92,400.00	$ 89,000.00		$ 181,400.00
						Lighting fixture type "C2" w/sensor module	113.00	EA	$ 67,800.00	$ 46,000.00		$ 113,800.00
						Lighting fixture type "C2"	256.00	EA	$ 128,000.00	$ 88,000.00		$ 216,000.00
						Lighting fixture type "D" w/sensor module	-	EA				$ -
						Lighting fixture type "D"	17.00	EA	$ 10,200.00	$ 10,200.00		$ 20,400.00
						Lighting fixture type "E1" w/sensor module	187.00	EA	$ 107,525.00	$ 107,525.00		$ 215,050.00
						Lighting fixture type "E1"	368.00	EA	$ 187,680.00	$ 184,000.00		$ 371,680.00
						Lighting fixture type "E2"	6.00	EA	$ 3,500.00	$ 3,500.00		$ 7,000.00
						Lighting fixture type "E2"	20.00	EA	$ 12,000.00	$ 8,000.00		$ 20,000.00
						Lighting fixture type "F" w/sensor module	137.00	EA	$ 79,460.00	$ 54,800.00		$ 134,260.00

						Lighting fixture type "F"	190.00	EA	$ 104,500.00	$ 76,000.00		$ 180,500.00
						Lighting fixture type "G" w/sensor module	151.00	EA	$ 80,030.00	$ 63,420.00		$ 143,450.00
						Lighting fixture type "G"	358.00	EA	$ 196,900.00	$ 139,620.00		$ 336,520.00
						Lighting fixture type "H1"	175.00	EA	$ 91,875.00	$ 105,000.00		$ 196,875.00
						Lighting fixture type "H2"	88.00	EA	$ 48,400.00	$ 58,960.00		$ 107,360.00
						Lighting fixture type "I"	25.00	EA	$ 15,000.00	$ 17,500.00		$ 32,500.00
						Lighting fixture type "J1"	173.00	EA	$ 95,150.00	$ 65,740.00		$ 160,890.00
						Lighting fixture type "J2"	8.00	EA	$ 5,200.00	$ 3,200.00		$ 8,400.00
						Lighting fixture type "K"	4.00	EA	$ 2,400.00	$ 1,200.00		$ 3,600.00
						3/4" conduit; extend ex. Home runs	-	LF				$ -
						# 12 wire; extend ex. Home runs	-	LF				$ -
						Programming sensors, controls	-	EA				$ -
		copy above cell and insert copied cell above the row										
						SUB TOTAL			**$ 2,620,900.00**	**$ 2,796,535.00**		**$ 5,417,435.00**
						Hard Cost:			**$ 2,971,825.00**	**$ 3,198,385.00**	**$ -**	**$ 6,170,210.00**
						Hard Cost Summary(Including General Requirement):						**$ 6,962,000.00**

Note:

1. Bidders' total material,labor, and equipment costs are fully-loaded with markups
2. Quanity includes expected material wastage
3. (*) Identify possible Sub Contract Work items
4. Shaded cell is where data must be entered

QUALIFICATION FORM

Name of Contractor: APS ELECTRIC INC

Name of Project: TOYOTA OF MANHATTAN

Location of Project: 660 12 Ave NY NY

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

Name: John Malabre
Title: PRESIDENT Phone Number: 516-982-0074
Brief description of the Project completed or the Project in progress: 350,000 SQ COMMERCIAL BUILDING, NEW MAIN ELECTRICAL SERVICE, ALL NEW LIGHTING, POWER DISTRIBUTION, HVAC SYSTEMS, GENERATOR AND GENERAL WIRING THROUGHOUT THE BUILDING

Was the Project performed as a prime, a subcontractor or a sub-subcontractor: ELECTRICAL PRIME

Amount of Contract, Subcontract or Sub-subcontract: $5,300,000.00

Start Date and Completion Date: FEBRUARY 2018 – SEPTEMBER 2021

****

Name of Contractor: APS ELECTRIC INC

Name of Project: STORAGE DELUXE

Location of Project: 41-06 DELONG ST QUEENS NY

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

Name: GEORGE PAPPAS
Title: PROJECT MANAGER Phone Number: 347-654-7642
Brief description of the Project completed or the Project in progress: NEW 200,000 SQ COMMERCIAL BUILDING, NEW ELECTRICAL 4000 AMP SERVICE, NEW LIGHTING SYSTEM, NEW HVAC SYSTEM, TRANSFORMERS AND GENERAL WIRING THROUGHOUT.

Was the Project performed as a prime, a subcontractor or a sub-subcontractor: ELECTRICAL PRIME

Amount of Contract, Subcontract or Sub-subcontract: $1,890,000.00

Start Date and Completion Date: MARCH 2015 – JULY 2017

QUALIFICATION FORM

Name of Contractor: APS ELECTRIC INC

Name of Project: 40-25 82ND ST

Location of Project: 40-25 82nd St Queens, NY

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

Name: RUSSELL ARNOLD
Title: PROJECT ENGINEER Phone Number: 646-246-8775
Brief description of the Project completed or the Project in progress: 100,000 SQFT COMMERCIAL BUILDING, NEW 4000 AMP MAIN ELECTRICAL SERVICE, ALL NEW LIGHTING, POWER DISTRIBUTION, HVAC SYSTEMS, GENERATOR AND GENERAL WIRING THROUGHOUT THE BUILDING

Was the Project performed as a prime, a subcontractor or a sub-subcontractor: ELECTRICAL PRIME

Amount of Contract, Subcontract or Sub-subcontract: $1,850,000.00

Start Date and Completion Date: JANUARY 2019 – JULY 2021

****

Name of Contractor: APS ELECTRIC INC

Name of Project: 172 MADISON AV

Location of Project: 172 MADISON AVE NY NY

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

Name: DAVID RABINS
Title: PROJECT MANAGER Phone Number: 917-386-5791
Brief description of the Project completed or the Project in progress: NEW 36 STORY RESIDENTIAL/ COMMERCIAL BUILDING, NEW ELECTRICAL 4000 AMP SERVICE, NEW LIGHTING SYSTEM, NEW HVAC SYSTEM, TRANSFORMERS AND GENERAL WIRING THROUGHOUT.

Was the Project performed as a prime, a subcontractor or a sub-subcontractor: ELECTRICAL PRIME

Amount of Contract, Subcontract or Sub-subcontract: 3,330,000.00

Start Date and Completion Date: JANUARY 2015 – DECEMBER 2018

FORM OF BID BOND

KNOW ALL MEN BY THESE PRESENTS. That we, APS Electric, Inc.
36-36 33rd Street, Suite 205, Long Island City, NY 11106

hereinafter referred to as the "Principal", and The Ohio Casualty 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 amount bid

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

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

Energy Efficiency Upgrades at the Louis J. Lefkowitz Building, 80 Center Street,

New York, NY 1014 - NYC DDC Project Number E17-0001

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 16th day of November, 2021.

(Seal)

APS Electric, Inc. (L.S.)

Principal

By: _____

(Seal)

The Ohio Casualty Insurance Company

Surety

By: _____

Evan Posses, Attorney-in-fact

ACKNOWLEDGMENT OF PRINCIPAL, IF A CORPORATION

State of New York County of Queens ss:
On this 1st day of December, 2021, before me personally came Mikhail Mikhaylov to me known, who, being by me duly sworn, did depose and say that he/she/they resides at 108-21 64th Avenue, Forest Hills, NY 11375 that he/she/they is the President of APS Electric 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.

SOFYA DJALALYAN STATE OF NEW YORK NOTARY PUBLIC Qualified in Queens County 01DJ6392961 MY COMMISSION EXPIRES 06-10-2023

Notary Public

ACKNOWLEDGMENT OF PRINCIPAL, IF A PARTNERSHIP

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

_____

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

SOFYA DJALALYAN STATE OF NEW YORK NOTARY PUBLIC Qualified in Queens County 01DJ6392961 MY COMMISSION EXPIRES 06-10-2023

SURETY ACKNOWLEDGEMENT

STATE OF New York

COUNTY OF Nassau

On this 16th day of November, 2021 before me personally came Evan Posses to me known, who being by me duly sworn, did depose and say that he/she resides in Long Beach, NY, that he/she is the Attorney-in-fact of The Ohio Casualty Insurance Company the corporation described in and which executed the above instruments; that he/she knows the seal of said corporation; that the seal affixed to said instrument is such corporate seal; that is was so affixed by other of the Board of Directors of said corporation, and that he/she signed her name thereto by like order.

Linda Horan

Notary Public

LINDA HORAN
Notary Public-State of New York
No. 01HO6036774
Qualified in Nassau County
My Commission Expires Feb. 7, 2022

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: **8205120-977149**

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, Evan Posses; Martin J. Lyons

all of the city of Wantagh state of NY 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 31st day of March, 2021.

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

By: _____
David M. Carey, Assistant Secretary

State of PENNSYLVANIA
County of MONTGOMERY ss

On this 31st day of March, 2021 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 Seal
Teresa Pastella, Notary Public
Montgomery County
My commission expires March 28, 2025
Commission number 1126044
Member, Pennsylvania Association of Notaries

By: _____
Teresa 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 Mutual Insurance Company, and West American Insurance Company which resolutions are now in full force and effect reading as follows:

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

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

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

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

I, 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 16th day of NOVEMBER 2021

By: _____
Renee C. Llewellyn, Assistant Secretary

LMS-12873 LMIC OCIC WAIC Multi Co 02/21

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

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

Liberty Mutual. SURETY

THE OHIO CASUALTY INSURANCE COMPANY

FINANCIAL STATEMENT — DECEMBER 31, 2019

Assets

Cash and Bank Deposits	($3,063,860)
*Bonds — U.S Government	1,006,099,793
*Other Bonds	3,994,316,104
*Stocks	192,977,450
Real Estate	0
Agents' Balances or Uncollected Premiums	762,342,997
Accrued Interest and Rents	33,878,311
Other Admitted Assets	919,548,302
Total Admitted Assets	**$6,906,099,097**

Liabilities

Unearned Premiums		$1,281,143,437
Reserve for Claims and Claims Expense		3,445,256,612
Funds Held Under Reinsurance Treaties		0
Reserve for Dividends to Policyholders		183,012
Additional Statutory Reserve		0
Reserve for Commissions, Taxes and Other Liabilities		196,783,603
Total		**$4,923,366,664**
Special Surplus Funds	$ 5,242,951	
Capital Stock	4,500,000	
Paid in Surplus	738,183,897	
Unassigned Surplus	1,234,805,586	
Surplus to Policyholders		**1,982,732,434**
Total Liabilities and Surplus		**$6,906,099,098**

THE OHIO CASUALTY INSURANCE COMPANY INCORPORATED 1919 NEW HAMPSHIRE

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

I, TIM MIKOLAJEWSKI, Assistant Secretary of The Ohio Casualty Insurance Company, do hereby certify that the foregoing is a true, and correct statement of the Assets and Liabilities of said Corporation, as of December 31, 2019, 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 27th day of March, 2020.

T A Mikolajewski

Assistant Secretary

NYC Mayor's Office of Contract Services

SCHEDULE B – M/WBE Utilization Plan

Part 1: M/WBE Participation Goals

Contract Overview (To be completed by contracting agency)

APT E-Pin# 85022B0017 FMS Project ID# E17-0001

Project Title Louis Lefkowitz Building Lighting & HVAC Upgrade-Borough of Manhattan Agency PIN# 8502021HR0003C

Contracting Agency Department of Design & Construction Bid/Proposal Response Date 12/01/2021

Agency Address 30-30 Thomson Avenue City Long Island City State NY ZIP 11101

Contact Person Joseph Stankus Title Business Development Advocacy Administrator

Telephone 718-391-3137 Email StankusJo@ddc.nyc.gov

Project Description (attach additional pages if necessary)

Louis Lefkowitz Building Energy Efficiency Upgrade - to improve building performance and reduce energy consumption and greenhouse gas emissions. Lighting upgrade, occupancy sensors, DCV, thermostatic radiator valves, andcondensate heat recoveryEnergy Efficiency project to improve building

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.

M/WBE Participation Goals for Services

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

Prime Contract Industry: General Construction

Category and Breakdown:

Unspecified 8.00 %

Black American ____ %

Hispanic American ____ %

Asian American ____ %

Women ____ %

Total Participation Goals 8.00 %

Line 1

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# 04-3758900 FMS Vendor ID# ____

Business Name APS ELECTRIC INC Contact Person Mikhail Mikhaylov

Business Address 36-36 33rd St.,STE 205 City Long Island City State NY ZIP 11106

Telephone (718) 996-9187 Email info@apselectric.net

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 $ 6,977,000.00

multiplied by x

Total Participation Goals 8.00 % *(Line 1 above)*

Calculated M/WBE Participation Amount $ 558,160.00 *Line 2*

OR

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*

Tax ID# 04-3758900 APT E-Pin# E17-0001

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? 8.00 %

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.

	Description of Work	Start Date (MM/YY)	End Date (MM/YY)	Planned $ Amount	Designated for M/WBE Y	Designated for M/WBE N	M/WBE Vendor Name	M/WBE Address	M/WBE Telephone
1.	PLUMBING WORK	07 / 23	07 / 25	$ 250,000.00	☑	☐	NCA PLUMBING AND HEATING LLC	95 Ralph Ave.,Brooklyn, NY 11221	(347) 435 - 521
2.	MECHANICAL/BMS WORK	07 / 23	07 / 25	$ 310,000.00	☑	☐	AMH MECHANICAL CONTRACTING INC.	46 Notre Dame Ave.,Hicksville, NY 11801	(516) 225 - 1706
3.		/	/	$	☐	☐			( ) -
4.		/	/	$	☐	☐			( ) -
5.		/	/	$	☐	☐			( ) -
6.		/	/	$	☐	☐			( ) -
7.		/	/	$	☐	☐			( ) -
8.		/	/	$	☐	☐			( ) -
9.		/	/	$	☐	☐			( ) -
10.		/	/	$	☐	☐			( ) -

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 [signature] Date 12/22/2021

Print Name Mikhail Mikhaylov Title President

SAFETY QUESTIONNAIRE

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

DDC Project Number: E17-0001

Company Size: ☐ Ten (10) employees or less

☒ Greater than ten (10) employees

Company has previously worked for DDC: ☒ YES ☐ 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	☒	☒
Residential Building Construction	☒	☐
Nonresidential Building Construction	☒	☒
Heavy Construction, except building	☐	☐
Highway and Street Construction	☐	☐
Heavy Construction, except highways	☐	☐
Plumbing, Heating, HVAC	☒	☒
Painting and Paper Hanging	☒	☒
Electrical Work	☒	☒
Masonry, Stonework and Plastering	☐	☒
Carpentry and Floor Work	☒	☒
Roofing, Siding, and Sheet Metal	☐	☒
Concrete Work	☒	☒
Specialty Trade Contracting	☒	☒
Asbestos Abatement		
Other (specify) _____	☐	☐

3. Experience Modification Rate:

The Experience Modification Rate (EMR) is a rating generated by the National Council of Compensation Insurance (NCCI). This rating is used to determine the contractor's premium for worker's compensation insurance. The 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 Intrastate and Interstate EMR for the past three years. [Note: For contractors with less than three years of experience, the EMR will be considered to be 1.00].

YEAR	INTRASTATE RATE	INTERSTATE RATE
2020	**1.22**	**N/A**
2019	**1.21**	**N/A**
2018	**1.10**	**N/A**

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 work-related fatalities) or an incident requiring OSHA notification within 24 hours (work-related 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.

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

YEAR	TOTAL NUMBERS OF HOURS WORKED BY EMPLOYEES	INCIDENT RATE
2020	**54,000 HRS**	**0**
2019	**58,000 HRS**	**0**
2018	**48,000 HRS**	**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	7.0
Nonresidential Building Construction	10.2
Heavy Construction, except building	8.7
Highway and Street Construction	9.7
Heavy Construction, except highways	8.3
Plumbing, Heating, HVAC	11.3
Painting and Paper Hanging	6.9
Electrical Work	9.5
Masonry, Stonework and Plastering	10.5
Carpentry and Floor Work	12.2
Roofing, Siding, and Sheet Metal	10.3
Concrete Work	8.6
Specialty Trade Contracting	8.6

5. Safety Performance on Previous DDC Project(s)

☐ YES ☑ NO 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: **12-21-21** By: _____
(Signature of Bidder: Owner, Partner, Corporate Officer)

Title: **PRESIDENT**

Project References

A. Contracts completed by the bidder

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

Project & Location	Contract Type	Contract Amount ($000)	Date Completed	Owner Reference & Tel. No.	Architect/Engineer Reference & Tel. No. (if different from owner)
Grand Street Settlement 80 Pitt Street, NY, NY	**PRIME GC**	**$1,357K**	**October 2021**	**DASNY- Peter Jackson 917-453-8154**	**Dewberry Engineers Shahid Joarder 646-434-2844**
TOYOTA of Manhattan 660 12 AV, NY, NY	**ELECTRICAL PRIME**	**$5,300K**	**September 2021**	**REDCOM- John Malabre 516-982-0074**	Robert Moleti
40-25 82nd st Commercial Bldg 40-25 82nd st, Queens, NY	**ELECTRICAL PRIME**	**$1,850K**	**July 2021**	**RYDER CONSTR.- Russel Arnold 646-246-8775**	**SK Engineers PC. Jason Todor 718-224-9091**
550 west 29th street CONDO 550 west 29th st, NY, NY	**ELECTRICAL PRIME**	**$2,200K**	**December 2019**	**RYDER CONSTR.- Russel Arnold 646-246-8775**	**WSP Engineers 212-532-9600**
301 E117TH st CONDO 301 E117th st, NY, NY	**ELECTRICAL PRIME**	**$260K**	**December 2019**	**Trans County Corp Peter Seriani 917-208-9030**	
165 Mercer st Office Bldg 165 Mercer, NY, NY	**ELECTRICAL PRIME**	**$600K**	**December 2019**	**RYDER CONSTR.- Russel Arnold 646-246-8775**	
Elec. Bill Brown Comfort Station 2401 Ave Y, Brooklyn, NY	**ELECTRICAL PRIME**	**$90K**	**May 2019**	**NYC DPR Sal Sorento 646-773-0281**	**NYCDPR**
172 Madison Av Condo 172 Madison Ave, NY, NY	**ELECTRICAL PRIME**	**$3,330K**	**December 2018**	**WBB Construction.- Carmine Davito 917-703-4485**	**COSENTINI ENG 212-615-3600**
Storage Deluxe College Point 41-06 Delong St, Queens, NY	**ELECTRICAL PRIME**	**$1,900K**	**May 2018**	**George Papadionidoulos 347-806-7120**	**GHT LIMITED Caroline Brosius 703-243-1200**

APS ELECTRIC, INC.

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)
CATHOLIC CHARITIES 155-55 CROSSBAY BLVD HOWARD BEACH	**GC**	**$971K**	**$100K**	**$500K**	**APRIL 2022**	**MALLIK DOKU DASNY 917-589-4125**	**AJ Kothawade Dack Consulting 908-456-4796**
SALT MARSH Nature Center, 3302 Ave U Brooklyn, NY	**GC**	**$1,530K**	**$400K**	**$800K**	**APRIL 2023**	**AZMAIN AZAD NYCDPR 646-864-7980**	**NYCDPR**
TOWNHOUSE AT 132 E74TH ST, NY, NY	**ELECTRICAL PRIME**	**$150K**	**$0K**	**$75K**	**MAY 2022**	**INS CONSTRUCTION IVAN 347-673-9266**	
815 PARK AVE	**ELECTRICAL PRIME**	**$88K**	**$0K**	**$75K**	**SEPT 2022**	**INS CONSTRUCTION IVAN 347-673-9266**	
660 12 AVE ROOF TOP LIGHTING /SNOW MELT	**ELECTRICAL PRIME**	**$120K**	**$0K**	**$80K**	**MAY 2022**	**REDCOM- John Malabre 516-982-0074K**	
NYPD 60 PCT ELEC UPGRADE	**GC**	**$3,000K**	**$200K**	**$500K**	**MAY 2022**	**NYCDDC Alex Padilla 646-238-4743**	**Alex Engelman Syska Hennesy 212-556-3468**
Brooklyn Civic Center/ Eleanor Roosevelt CS, Brooklyn, NY	**GC**	**$1,700K**	**$220K**	**$500K**	**MAY 2023**	**NYCDPR Pierre Augustin 917-588-4778**	**NYCDPR**

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)

Department of Design and Construction

PROJECT ID: **E17-0001**

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

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

VOLUME 2 OF 3

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

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

Lighting & HVAC Energy Efficiency Upgrades at the Louis J. Lefkowitz Building

LOCATION: **80 Centre Street**
BOROUGH: **New York, NY 10013**
CITY OF NEW YORK

CONTRACT NO. 1 **ELECTRICAL WORK**

DCAS

Shenoy Engineering, P.C.

Date: **August 9, 2021**

Department of Design and Construction

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

30-30 THOMSON AVENUE
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NOTICE TO BIDDERS

This contract is subject to a new 2020 Project Labor Agreement

This contract is subject to the attached Project Labor Agreement ("PLA") entered into between the City and the Building and Construction Trades Council of Greater New York ("BCTC") affiliated Local Unions. By submitting a bid, the Contractor agrees that if awarded the Contract the PLA is binding on the Contractor and all subcontractors of all tiers.

The bidder to be awarded the contract will be required to execute a Letter of Assent prior to award. The Contractor shall include in any subcontract a requirement that the subcontractor, and sub-subcontractors of all tiers, become signatory to and bound to the PLA with respect to the subcontracted work. The Contractor will also be required to have all subcontractors of all tiers execute a Letter of Assent prior to such subcontractors performing any Program Work.

Bidders are advised that the City of New York and City agencies have entered into multiple PLAs. The terms of each PLA, while similar, are not identical. Please also note that there are revisions between the 2020 Citywide Renovation PLA attached to this bid and the prior 2015 Citywide Renovation PLA.

All bidders are urged to review the entire 2020 Citywide Renovation PLA prior to submitting a bid.

To the extent that the terms of the PLA conflict with any other terms of the invitation for bids, including the Standard Construction Contract, the terms of the PLA shall govern. For example, the PLA section that authorizes the scheduling of a four-day week, ten hours per day on straight time at the commencement of the job, PLA Article 12, Section 1(A), overrides the Standard Construction Contract's provision concerning a five-day work week with a maximum of eight hours in a day, Standard

Construction Contract Article 37.2.1. Where, however, the invitation for bids, including the Standard Construction Contract, requires the approval of the City/Department, the PLA does not supersede or eliminate that requirement.

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

If this Contract is subject to the Minority-Owned and Women-Owned Business Enterprise ("M/WBE") program implemented pursuant to New York City Administrative Code § 6-129, the specific requirements of M/WBE participation for this Contract are set forth elsewhere in this bid package. If such requirements are included with this Contract, the City strongly advises Contractors to read those provisions, as well as PLA Article 4, Section 4. A list of certified M/WBE firms may be obtained from the Department of Small Business Services (DSBS) website at http://mtprawvwsbswtp1-1.nyc.gov/, emailing MWBE@sbs.nyc.gov, or by calling the DSBS certification hotline at (212) 513-6311, or by visiting or writing the DSBS at One Liberty Plaza, 11th Floor, New York, New York, 10006.

The local collective bargaining agreements (CBAs) that are incorporated into the PLA as PLA Schedule A Agreements are available from the Department's Agency Chief Contract Officer upon the request of any prospective bidder.

Please note that the "PLA Schedule A" is distinct from the Department's Schedule A that is a part of this invitation for bids.

2020 Citywide Renovation Project Labor Agreement
Frequently Asked Questions

1. **Q.** Does a Contractor need to be signatory with the unions in the NYC Building and Construction Trades Council ("BCTC") in order to bid on projects under the PLA?

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

2. **Q.** Does a Contractor agreeing to the PLA and signing the Letter of Assent create a labor agreement with these unions outside of the project covered by the PLA?

   A. No, the PLA applies only to those projects that the Contractor agrees to perform under the PLA and makes no labor agreement beyond those projects. Contractors do not need to sign any additional agreements (*e.g.*, a collective bargaining agreement) with a union aside from the Letter of Assent to work on a PLA project.

3. **Q.** Do the provisions of the PLA apply equally to subcontractors as well as contractors and how does the PLA affect the subcontractors that a bidder may utilize on the project?

   A. Yes, the PLA applies to subcontractors and all subcontractors performing Program Work must agree to become party to the PLA. Subject to the Agency's approval of subcontractors pursuant to Article 17 of the Standard Construction Contract, a Contractor may use any subcontractor, union or non-union, as long as the subcontractor signs the Letter of Assent. See PLA Article 2, Section 8.

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

   A. No, bidders do not have to submit signed Letters of Assent from their subcontractors with their bid. However, subcontractors performing Program Work will be required to sign the Letter of Assent prior to being approved by the Agency.

5. **Q.** May a Contractor or subcontractor use any of its existing employees to perform this work?

   A. Generally, labor will be referred to the Contractor from the respective signatory local unions. However, Contractors and subcontractors may use up to 12% of their existing, qualifying labor force for this work. Certified M/WBEs for which participation goals are set pursuant to NYC Administrative Code § 6-129 that are not signatory to any Schedule A collective bargaining agreements ("CBAs") may use their existing employees for the 2nd, 4th, 6th and 8th employee (per trade) needed on the job if their contracts are valued at or under $2,000,000. Any additional workers will be referred to the Contractor in accordance with the 12% referral requirements set forth in the PLA. See PLA Article 4, Section 2.

6. **Q.** Must the City set M/WBE participation goals for the particular project or contract in order for a certified M/WBE to utilize the provisions of PLA Article 4, Section 2(C)?

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

7. **Q.** May a Contractor bring in union members from locals that are not signatory unions?

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

8. **Q.** Does a non-union employee working under the PLA automatically become a union member?

   A. No, the non-union employee does not automatically become a union member by working on a project covered by the PLA and nothing in the PLA requires employees to join a union or pay dues or fees to a union as a condition of working on the covered project. This Agreement is not, however, intended to supersede independent requirements in applicable local union agreements as to contractors that are otherwise signatory to those agreements and as to employees of such employers performing covered work. Non-union employees will be enrolled in the appropriate benefit plans and earn credit toward various union benefit programs except in certain circumstances as set forth in the PLA. See PLA Article 4, Section 6 and Article 11.

9. **Q.** Are all Contractors and subcontractors working under the PLA, including non-union Contractors and Contractors signatory to CBAs with locals other than those that are signatories to the PLA, required to make contributions to designated employee benefit funds?

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

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

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

10. **Q.** When do Core Employees become eligible for union benefits?

    A. Union benefit plans have their own plan documents that determine eligibility and workers will become eligible for certain benefits at different points in time. Contractors who will have Core Employees should speak with the respective union(s) as to benefit eligibility thresholds. Employees that may remain unaffiliated with any local union at the completion of their employment may apply for any distributions to which they may be entitled from the funds in accordance with the applicable rules and governing documents of the unions and the employee benefit funds.

11. **Q.** What happens if a Contractor or subcontractor fails to make a required payment to a designated employee benefit fund?

    A. The PLA sets forth a process for unions to address a Contractor or a subcontractor's failure to make required payments. The process includes potentially the direct payment by the City to the benefit fund of monies owed and the corresponding withholding of payments to the Contractor. See PLA Article 11, Section 2.

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

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

12. **Q.** Does signing on to the PLA satisfy the Apprenticeship Requirements established for this bid?
    A. Yes. By agreeing to perform the Work subject to the PLA, the bidder demonstrates compliance with the apprenticeship requirements imposed by this Invitation for Bids.

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

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

14. **Q.** What happens if a union does not provide a worker within 48 hours from the request (Saturdays, Sundays, and holidays excepted)?

A. In the event that a Local Union does not fill any request for qualified employees within a 48-hour period after such requisition is made by a Contractor (Saturdays, Sundays and holidays excepted), a Contractor may employ qualified applicants from any other available source.

15. **Q.** May a Contractor discharge a union referral for lack of productivity?

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

16. **Q.** May a contractor assign a management person to site?

A. Yes. Managers are not subject to the provisions of the PLA, so there is no restriction on management and/or other non-trade personnel, as long as such personnel do not perform trade functions. See Article 3, Section 1.

17. **Q.** What type of work can Stewards perform?

A. All Stewards must be working Stewards (*i.e.*, they must be performing Program Work). In addition, Stewards may perform other tasks such as receiving complaints or grievances from other employees of the Steward's trade. Stewards may not determine when overtime is worked. Stewards are entitled to the same wages as other employees of that trade. See PLA Article 5, Sections 2 and 3.

18. **Q.** Can a Contractor utilize apprentices?

A. Contractors are permitted to utilize apprentices so long as the ratios between journeyperson and apprentice do not exceed the allowable ratios set by the New York State Department of Labor ("NYSDOL"). Should a Contractor request that apprentices be provided for Program Work, the referring Local Union shall comply with that request so long as it is consistent with the maximum ratios permitted by NYSDOL.

19. **Q.** What is HireNYC Construction Careers?

A. HireNYC Construction Careers is an initiative to advance career opportunities within the construction industry. The initiative has a target goal of 30% of all hours worked on PLA projects are performed by workers who reside in NYCHA housing or zip codes where 15% or more of the residences are below poverty. When a Contractor requests employees, the trades will take into account the target goals when they refer additional workers.

20. **Q.** Does the PLA provide a standard work day across all the signatory trades?

A. Yes, all signatory trades will work an eight (8) hour day, Monday through Friday with a day shift at straight time as the standard work week. The PLA also permits a Contractor to schedule a four-day (within Monday through Friday) work week, ten (10) hours per day at straight time if announced at the commencement of the project. See PLA Article 12, Section 1. This is an example where the terms of the PLA override provisions of the Standard Construction Contract (compare with section 37.2 of the Standard Construction Contract). The standard work week may be reduced to 35 or 37 ½ hours of work in those limited circumstances where the City states in the bid documents that the Contractor will not be given access to the site to accommodate an 8-hour day. The 8 hour, 7 ½ hour or 7-hour work day must be established at the commencement of the project by the Agency and may not be altered by the Contractor.

21. **Q.** Does the PLA create a common holiday schedule for all the signatory trades?

A. Yes, the PLA recognizes nine common holidays. See PLA Article 12, Section 4.

22. **Q.** Are workers entitled to holiday pay if they do not work on the holiday?

A. No. Workers are only entitled to pay if they work on the holiday. See PLA Article 12, Section 4.

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

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

24. **Q.** May the Contractor schedule overtime work, including work on a weekend?

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

25. **Q.** Are overtime payments affected by the PLA?

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

26. **Q.** Are there special provisions for Saturday work when a day is 'lost' during the week due to weather, power failure or other emergency?

A. Yes, when this occurs the Contractor may schedule Saturday work at weekday rates. See PLA Article 12, Section 5.

27. **Q.** Does the PLA contain special provisions for the staffing of temporary services?

A. Yes. Where temporary services are required by specific request of the Agency or construction manager, they shall be provided by the Contractor's existing employees during working hours in which a shift is scheduled for employees of the Contractor. The need for temporary services during non-working hours will be determined by the Agency or construction manager. There will be no stacking of trades on temporary services. See PLA Article 15.

28. **Q.** What do the workers get paid when work is terminated early in a day due to inclement weather or otherwise cut short of 8 hours?

A. The PLA provides that employees who report to work pursuant to regular schedule and not given work will be paid two hours of straight time. Work terminated early for severe weather or emergency conditions will be paid only for time actually worked. In other instances where work is terminated early, the worker will be paid for a full day. See PLA Article 12, Sections 6 and 8. The usual reporting pay requirement of two hours for employees who report to their work location pursuant to their regular schedule does not apply when the National Weather Service issues a Weather Advisory and the Contractor speaks to the employee at least four hours before their shift starting time. See PLA Article 12, Section 6.

29. **Q.** Should a local collective bargaining agreement of a signatory union expire during the project will a work stoppage occur on a project subject to the PLA?

A. No. All the signatory unions are bound by the 'no strike' agreement as to the PLA work. Work will continue under the PLA and the otherwise expired local CBA(s) until the new local CBA(s) are negotiated and in effect. See PLA Articles 7 and 19.

30. **Q.** May a Contractor working under the PLA be subject to a strike or other boycott activity by a signatory union at another site while the Contractor is a signatory to the PLA?

A. Yes. The PLA applies ONLY to work under the PLA and does not regulate labor relations at other sites even if those sites are in close proximity to PLA work.

31. **Q.** If a Contractor has worked under other PLAs in the New York City area, are the provisions in this PLA generally the same as the others?

A. While PLAs often look similar to each other, and particular clauses are often used in multiple agreements, each PLA is a unique document and should be examined accordingly.

32. **Q.** What happens if a dispute occurs between the Contractor and an employee during the project?

A. The PLA contains a grievance and arbitration process to resolve disputes between the Contractor and the employees. See PLA Article 9.

33. **Q.** What happens if there is a dispute between locals as to which local gets to provide employees for a particular project or a particular aspect of a project?

A. The PLA provides for jurisdictional disputes to be resolved in accordance with the NY Plan. A copy of the NY Plan is available upon request from the Agency. The PLA provides that work is not to be disrupted or interrupted pending the resolution of any jurisdictional dispute. The work proceeds as assigned by the Contractor until the dispute is resolved. See PLA Article 10.

34. **Q.** Does the PLA contain special provisions for JOCS or task order-based Contracts?

A. The PLA does not apply to Task Orders or Work Orders that do not exceed $250,000 issued under JOCS or Requirements Contracts. See PLA Article 3, Section 1.

35. **Q.** How do the referral rules work for Operating Engineers Locals 14 and 15?

A. If there is Program Work within the jurisdiction of Operating Engineers Locals 14 or 15, the contractor shall request labor from the appropriate local union. If the locals provide labor consistent with the referral provisions outlined in Article 4, Section 2, the terms of the Local 14 CBA or Local 15 CBA will apply to that work. However, if the locals do not provide labor for that work, the terms of the PLA will apply to such work.

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District Councils & Affiliates Contact Information

Bricklayers & Allied Craftworkers Local 1
4 Court Square
Long Island City, NY 11101
Business Manager: Jack Argila
P: (718) 392-0525
email: jargila@bac1ny.com

BoilerMakers Local 5
24 Van Siclen Avenue
Floral Park, NY 11001
Business Manager: Steve Ludwigson
P: 516-326-2500
email: boilermakerslocal5@verizon.net

Building Concrete & Excavating Laborers Local 731
34-11 35th Avenue
Astoria, NY 11106
Business Manager: Joseph D'Amato
P: 718-706-0720
email: joed731bm@gmail.com

NYC & Vicinity District Council of Carpenters
395 Hudson Street, 9th Fl
New York, NY 10014
Business Manager: Joe Geiger
P: 212-366-7500
email: jgeiger@nycdistrictcouncil.org

Concrete Workers District Council No. 16
30-56 Whitestone Expressway Suite 320
Flushing, NY 11354
Business Manager: Angelo Angelone
P: 718-886-0516
email: ccwdc16@yahoo.com

Cement Masons Local #780
150-50 14th Rd Suite 4
Whitestone, NY 11357
Business Manager: Gino Castingnoli
P: 718-357-3750
email: gcastignoli@noedc.org

Electrical Local 3
158-11 Harry Van Arsdale Jr. Avenue
Flushing, NY 11365
Business Manager: Chris Erikson
P: 718-591-4000
email: cerikson@local3ibew.org

Roofers & Waterproofers Local 8
12-11 43rd Avenue
LIC, NY 11101
Business Manager: Nick Siciliano
P: 718-361-1169
email: nick@fundsforlocal8roofers.org

SheetMetal Workers Local 28
500 Greenwich Street
New York, NY 10013
Business Manager: Eric Meslin
P: 212-941-7700
email: emeslin@local28union.com

SheetMetal Workers Local 137
21-42 44th Drive
LIC, NY 11101
Business Manager: Dante Dano
P: 718-937-4514
email: dante@local137.com

Elevator Constructors Local 1
47-24 27th Avenue
LIC, NY 11101
Business Manager: Lenny Legotte
P: 718-767-7004
email: llegotte@localoneiuec.com

Engineers Local 14
141-57 Northern Boulevard
Flushing, NY 11354
Business Manager: Edwin Christian
P: 718-939-0600
email: lynnd@iuoelocal14.com

Engineers Local 15, 15A, 15B, 15C & 15D
44-40 11th Street
Long Island City, 11101
Business Manager: Tom Callahan
P: 212-929-5327
email: love015@aol.com

Engineers Local 30
16-16 Whitestone Expressway
Whitestone, NY 11357
Business Manager: William Lynn
P: 718-847-8484
email: williamlynn@iuoelocal30.org

Engineers Local 94
331-337 West 44th Street
New York, NY 10036
Business Manager: Kuba Brown
P: 212-245-7040
email: kubabrown@local94.com

Heat & Frost Insulators Local 12
35-53 24th Street
LIC, NY 11101
Business Manager: John Jovic
P: 718-784-3456
email: john@insulatorslocal12.com

Heat & Frost Insulators Local 12A
1536 127th Street
College Point, NY 11356
Business Manager: Jamie Soto
P: 718-886-7226
email: jsoto.12a@aol.com

Steamfitters Local 638
32-32 48th Avenue
LIC, NY 11101
Business Manager: Scott Roche
P: 718-392-3420
email: popparoche@gmail.com

Teamsters Local 282
2500 Marcus Avenue
Lake Success, NY 11042
Business Manager: Tom Gesauldi
P: 516-488-2822 #141
email: tgesualdi282@yahoo.com

Teamsters Local 814
21-42 44th Drive
LIC, NY 11101
Business Manager: Jason Ide
P: 718-609-6407
email: jasonI@ibt814.com

Iron Workers District Council
227 E 56th Street Suite 300A
New York, NY 10022
Business Manager: James Mahoney
P: 212-302-1868
email: jmahoney@iwintl.org

Mason Tenders District Council
520 8th Avenue
New York NY 10018
Business Manager: Robert Bonanza
P: 212-452-9400
email: RBonanza@MasonTenders.org

Painters District Council No. 9
45 West 14th Street
New York, NY 10011
Business Manager: Joe Azzopardi
P: 212-255-2950
email: joeazzo1281@yahoo.com

Pavers & Roadbuilders DC No.1
136-25 37th Avenue, Suite 502
Flushing NY 11354
Business Manager: Keith Lozcalzo
P: 718-886-3310
email: klozcalzo@aol.com

Plasterers Local 262
2241 Conner Streeet
Bronx, NY 10466
Business Manager: Dale Alleyne
P:718-547-5440
email: dalleyne@noedc.org

Plumbers Local 1
50-02 5th Street
Long Island City, NY 11101
Business Manager: Michael Apuzzo
P: 718-738-7500 #5904
email: mapuzzo@ualocal1.org

Private Sanitation Local 813
45-18 Court Square, Suite 600
LIC, NY 11101
Business Manager: Sean Campbell
P: 718-937-7010 ext 244
email: orodriguez@teamsters813.org

Tile Marble & Terrazzo Local 7
45-34 Court Square
LIC, NY 11101
Business Manager: William Hill
P: 718-786-7648
email: whill@baclocal7.com

Window Cleaners No. 2 SEIU 32BJ
101 Avenue of the Americas
New York, NY 10013
Business Manager: Gerard McEneaney
P: 212-539-2904
email: gmceneaney@seiu32bj.org

Carpenters District Council

NYC & Vicinity District Council of Carpenters
395 Hudson Street, 9th Fl
New York, NY 10014
Business Manager: Joe Geiger
P: 212-366-7500

Carpenters Local 20
900 South Avenue
Suite 53
Staten Island, NY 10310

Carpenters Local 926
373 96th Street
Brooklyn, NY 11209
P: 718-491-0926

Carpenters Local 45
214-38 Hillside Avenue
Queens Village, NY 11427
P: 718-464-6016

Dockbuilders/Timberman Local 1556
395 Hudson Street 1st Floor
New York, NY 10014

Carpenters Local 157
395 Hudson Street 1st Fl
New York, NY 10014
P: 212-685-0567

Millwright & Machinery Erectors Local 740
89-07 Atlantic Avenue
Woodhaven, NY 11412
P: 718-849-3636

Concrete Workers District Council No. 16

Concrete Workers District Council No. 16
30-56 Whitestone Expressway Suite 320
Flushing, NY 11354
Business Manager: Angelo Angelone
P: 718-886-36432

Cement & Concrete Workers Local 6A
30-56 Whitestone Expressway
Suite 310
Flushing, NY 11354
Business Manager: Anthony Amella Jr
P: 718-888-9383
email: ccwl6a@aol.com

Cement & Concrete Workers Local 20
36-36 33rd Street
Suite 302
LIC, NY 11106
Business Manager: John Peters
P: 718-361-8131
email: local20@laborerslocal20.org

Cement & Concrete Workers Local 18A
4235 Katonah Avenue
Bronx, NY 10470
Business Manager:Kieran O'Sullivan
P: 718-798-9035
email: local18a@yahoo.com

Iron Workers District Council

Iron Workers District Council
227 E 56th Street Suite 300A
New York, NY 10022
Business Manager: James Mahoney
P: 212-302-1868
email: jmahoney@iwintl.org

IronWorkers Local 361
89-19 97th Avenue
Ozone Park, NY 11416
Business Manager: Matthew Chartrand
P: 718-322-1016/17
email: mchartrand@local361.com

Metal Lathers Local 46
1332 Third Avenue
New York, NY 10021
Business Manager:
P: 212-737-0500
email:

Ironworkers Local 40
451 Park Avenue South
New York, NY 10016
Business Manager: Bob Walsh
P: 212-889-1320
email: bobwalsh@ironworkers.net

Derrickmen & Riggers Local 197
35-53 24th Street
LIC, NY 11106
Business Manager: William Hayes
P: 718-361-6534
email: billhayes197@yahoo.com

Ornamental IronWorkers Local 580
501 West 42nd Street
New York, NY 10036
Business Manager: Pete Myers
p: 212-594-1662
email: pmyers@Local-580.com

Mason Tenders District Council

Mason Tenders District Council
520 8th Avenue
New York NY 10018
Business Manager: Robert Bonanza
P: 212-452-9400
email: RBonanza@MasonTenders.org

Construction & General Laborers Local 79
520 8th Avenue
New York, NY 10018
Business Manager: Michael Prohaska
P: 212-465-7900
email: mpro@laborerslocal79.org

Asbestos Lead & Hazardous Waste Laborers Local 78
30 Cliff Street
New York, NY 10038
Business Manager: Pawell Gruchacz
P: 212-227-4803
email: pgruchacz@local78.org

Painters District Council # 9

**Painters District Council No. 9*
45 West 14th Street
New York, NY 10011
Business Manager: Joseph Azzopardi
P: 212-255-2950

Drywall Tapers Local 1974
265 West 14th Street
New York, NY 10011
Business Manager: Sal Marsala
P: 212-242-8500
email:

Painters Structural Steel Local 806
40 West 27th Street
New York, NY 10001
Business Manager: Brian Casey
P: 212-447-1838/0149
email: bcasey6009@gmail.com

Glaziers Local 1087
45 West 14th Street
New York, NY 10011
Business Manager: Steve Birmingham
P: 212-924-5200
email: bermo1087@gmail.com

Metal Polishers Local 8A-28A
36-18 33rd Street 2nd Floor
LIC, NY 11106
Business Manager:
P: 718-361-1770
email:

PROJECT LABOR AGREEMENT
COVERING SPECIFIED
RENOVATION & REHABILITATION
OF CITY OWNED BUILDINGS AND STRUCTURES

2020 – 2024

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

ARTICLE 1 - PREAMBLE

WHEREAS, the City of New York desires to provide for the cost efficient, safe, quality, and timely completion of certain rehabilitation and renovation work ("Program Work," as defined in Article 3) in a manner designed to afford the lowest costs to the Agencies covered by this Agreement, and the public it represents, and the advancement of permissible statutory objectives;

WHEREAS, this Project Labor Agreement will foster the achievement of these goals, inter alia, by:

(1) providing a mechanism for responding to the unique construction needs associated with this Program Work and achieving the most cost-effective means of construction, including direct labor cost savings, by the Building and Construction Trades Council of Greater New York and Vicinity and the signatory Local Unions and their members waiving various shift and other hourly premiums and other work and pay practices which would otherwise apply to Program Work;

(2) expediting the construction process and otherwise minimizing the disruption to the covered Agencies' ongoing operations at the facilities that are the subject of the Agreement;

(3) avoiding the costly delays of potential strikes, slowdowns, walkouts, picketing and other disruptions arising from work disputes, reducing jobsite friction on common situs worksites, and promoting labor harmony and peace for the duration of the Program Work;

(4) standardizing the terms and conditions governing the employment of labor on Program Work;

(5) permitting wide flexibility in work scheduling and shift hours and times to allow maximum work to be done during off hours yet at affordable pay rates;

(6) permitting adjustments to work rules and staffing requirements from those which otherwise might obtain;

(7) providing comprehensive and standardized mechanisms for the settlement of work disputes, including those relating to jurisdiction;

(8) fostering increased participation by Minority and Women-owned Business Enterprises ("MWBEs");

(9) encouraging the development of pathways to construction careers;

(10) ensuring a reliable source of skilled and experienced labor; and

(11) securing applicable New York State Labor Law exemptions.

WHEREAS, the Building and Construction Trades Council of Greater New York and Vicinity, its participating affiliated Local Unions and their members, desire to assist the City in meeting these operational needs and objectives as well as to provide for stability, security and work opportunities which are afforded by this Project Labor Agreement; and

WHEREAS, the Parties desire to maximize Program Work safety conditions for both workers and the community in the project area.

NOW, THEREFORE, the Parties enter into this Agreement:

SECTION 1. PARTIES TO THE AGREEMENT

This is a Project Labor Agreement ("Agreement") entered into by the City of New York ("City"), on behalf of itself and the Agencies covered herein, including in their capacity as construction manager of covered projects and/or on behalf of any third party construction manager which may be utilized, and the Building and Construction Trades Council of Greater New York and Vicinity ("Council" or "BCTC") (on behalf of itself) and the signatory affiliated Local Unions ("Unions" or "Local Unions"). The Council and each signatory Local Union hereby warrant and represents that it has been duly authorized to enter into this Agreement.

ARTICLE 2 - GENERAL CONDITIONS

SECTION 1. DEFINITIONS

A. The term "Agency" means the following New York City agencies: the Department for the Aging ("DFTA"), Administration for Children's Services ("ACS"), Department of Citywide Administrative Services ("DCAS"), Department of Correction ("DOC"), Department of Design and Construction ("DDC"), Fire Department ("FDNY"), Department of Homeless Services ("DHS"), Human Resources Administration ("HRA"), Department of Health and Mental Hygiene ("DOHMH"), Department of Parks and Recreation ("DPR"), Police Department ("NYPD"),

Department of Sanitation ("DSNY"); Department of Transportation ("DOT"), Department of Buildings ("DOB"); with respect to Program Work as defined in Article 3, the New York City Agency that awards a particular contract subject to this Agreement may be referred to hereafter as the "Agency";

B. The term "Agreement" means this project labor agreement ("PLA"), the applicable Schedule "A" Collective Bargaining Agreements (each a "CBA") identified in Schedule "A", and each Exhibit hereto;

C. The term "BCTC" refers to the Building and Construction Trades Council of Greater New York and Vicinity. The terms "BCTC" and "Council" are used interchangeably;

D. The term "Contractor(s)" shall include any Construction Manager, General Contractor and all other contractors, and subcontractors of all tiers engaged in Program Work within the scope of this Agreement as defined in Article 3. When an Agency acts as Construction Manager, unless otherwise provided, it has the rights and obligations of a "Construction Manager" in addition to the rights and obligations of an Agency;

E. The term "Core Employee" means an employee that has been on a contractor's payroll consistent with Article 4, Section 2(B) and (C);

F. The term "Minor Repair" means routine repair, service, or maintenance that is recurrent, day to day, periodic scheduled or routine work required to preserve or restore a building, facility or system to working order;

G. The term "HireNYC Construction Careers" refers to the PLA initiative to advance career opportunities for Program Hires;

H. The term "Program Work" is the work covered by this Agreement as defined in Article 3;

I. The term "Program Hire" means an individual that resides in a zip code where at least 15% of the individuals residing in such zip code are below the federal poverty rate and residents of NYCHA housing regardless of zip codes; and

J. The term "Union(s)" or "Local Union(s)" refers to the various participating unions affiliated with the BCTC, singularly and collectively.

SECTION 2. CONDITIONS FOR AGREEMENT TO BECOME EFFECTIVE

This Agreement shall not become effective unless each of the following conditions are met: the Agreement is executed by (1) the Council, on behalf of itself, (2) the participating affiliated Local Unions; and (3) the mayor of the City of New York or their designee.

SECTION 3. ENTITIES BOUND & ADMINISTRATION OF AGREEMENT

This Agreement shall be binding on all participating Unions and their affiliates, the Construction Manager (in its capacity as such) and all Contractors of all tiers performing Program Work, as defined in Article 3. The Contractors shall include in any subcontract that they let for performance during the term of this Agreement a requirement that their subcontractors, of all tiers, become signatory and bound by this Agreement with respect to that subcontracted work falling within the scope of Article 3 and all Contractors (including subcontractors) performing Program Work shall be required to sign a "Letter of Assent" in the form annexed hereto as Exhibit "A". This Agreement shall be administered by the applicable Agency or a Construction Manager or such other designee as may be named by the Agency or Construction Manager, on behalf of all Contractors.

SECTION 4. SUPREMACY CLAUSE

This Agreement, together with the local Collective Bargaining Agreements (each a "CBA") appended hereto as Schedule "A", represents the complete understanding of all signatories and supersedes any national agreement, local agreement or other CBA of any type which would otherwise apply to this Program Work, in whole or in part, except for Program Work which falls

within the jurisdiction of the Operating Engineers Locals 14 and 15. If Program Work falling within the jurisdiction of Operating Engineers Locals 14 and 15 is accepted by and performed by said locals, only then will such work be performed under the terms and conditions set out in the Schedule "A" agreements of Operating Engineers Locals 14 and 15. The CBAs of the affiliated local unions that cover the particular type of construction work to be performed by the contractor, and as set forth in the Schedule "A" list of agreements, shall be deemed the Schedule "A" Collective Bargaining Agreements ("Schedule "A" CBA") under this Agreement. Where association and independent CBAs for a particular type of construction work are both set forth in Schedule "A", association members shall treat the applicable association agreement as the Schedule "A" CBA and independent contractors shall treat the applicable independent agreement as the Schedule "A" CBA. Subject to the foregoing, where a subject covered by the provisions of this project labor agreement is also covered by a Schedule "A" CBA, the provisions of this project labor agreement shall prevail. It is further understood that no Contractor shall be required to sign any other agreement as a condition of performing Program Work. No practice, understanding or agreement between a Contractor and a Local Union which is not set forth in this Agreement shall be binding with respect to Program Work unless endorsed in writing by the Construction Manager or such other designee as may be designated by the Agency. Nothing in this Agreement requires employees to join a union or pay dues or fees to a union as a condition of working on the covered project. This Agreement is not, however, intended to supersede independent requirements in applicable local union agreements as to contractors that are otherwise signatory to those agreements and as to employees of such employers performing covered work.

SECTION 5. LIABILITY

The liability of any Contractor and the liability of any Union under this Agreement shall be several and not joint. The Construction Manager and any Contractor shall not be liable for any

violations of this Agreement by any other Contractor; and the Council and Local Unions shall not be liable for any violations of this Agreement by any other Union.

SECTION 6. THE AGENCY

The Agency (or Construction Manager where applicable) shall require in its bid specifications for all Program Work within the scope of Article 3 that all successful bidders, and their subcontractors of all tiers, become bound by, and signatory to, this Agreement. The Agency (or Construction Manager) shall not be liable for any violation of this Agreement by any Contractor. It is understood that nothing in this Agreement shall be construed as limiting the sole discretion of the Agency or Construction Manager in determining which Contractors shall be awarded contracts for Program Work. It is further understood that the Agency or Construction Manager has sole discretion at any time to terminate, delay or suspend the Program Work, in whole or part, on any project.

SECTION 7. AVAILABILITY AND APPLICABILITY TO ALL SUCCESSFUL BIDDERS

The Unions agree that this Agreement will be made available to, and will fully apply to, any successful bidder for (or subcontractor of) Program Work who becomes signatory thereto, without regard to whether that successful bidder (or subcontractor) performs work at other sites on either a union or non-union basis and without regard to whether employees of such successful bidder (or subcontractor) are, or are not, members of any unions. This Agreement shall not apply to the work of any Contractor which is performed at any location other than the site of Program Work.

SECTION 8. SUBCONTRACTING

Contractors will subcontract Program Work only to a person, firm or corporation who is or agrees to become party to this Agreement.

ARTICLE 3 - SCOPE OF THE AGREEMENT
SECTION 1. WORK COVERED

A. Program Work shall be limited to designated rehabilitation and renovation construction contracts bid and let by an Agency (or its Construction Manager where applicable) after the effective date of this Agreement with respect to rehabilitation and renovation work performed for an Agency on City-owned property under contracts advertised for public solicitation prior to December 31, 2024. Subject to the foregoing, and the exclusions below, such Program Work shall mean any and all contracts that predominantly involve the renovation, alteration, repair, rehabilitation or expansion of an existing City-owned building or structure within the five boroughs of New York City. Examples of Program Work include, but are not limited to, the renovation, repair, alteration and rehabilitation of an existing temporary or permanent structure, or an expansion of above ground structures located in the City on a City-owned building. Program Work shall also include job order contracts ("JOCS"), demolition work, painting services. Low voltage work, site work, elevator work, mold, asbestos and lead abatement, carpentry services, and carpet removal and installation shall be included as Program Work only when incidental to such building renovation and/or rehabilitation of City-owned buildings or structures and included in a contract that predominantly involves such renovation and/or rehabilitation.

B. It is understood that, except where the City specifically applies this Agreement to such work in its bid documents, Program Work does not include, and this Agreement shall not apply to, any other work, including:

1. Contracts that are let under a different project labor agreement with one of the defined City Agencies, and/or other Agencies and Authorities that have entered separate PLAs, such as DEP, NYCHA, H+H and SCA;

2. Contracts let and work performed in connection with projects carried over,

recycled from, or performed under bids or rebids relating to work that were bid prior to the effective date of this Agreement or after December 31, 2024;

3. Contracts procured on an emergency basis;

4. Prime contracts that do not exceed $3,000,000;

5. Contracts for work on streets and bridges and for the closing or environmental remediation of landfills;

6. Contracts with not-for-profit corporations where the City is not awarding or performing the work performed for that entity;

7. Contracts with governmental entities where the City is not awarding or performing the work performed for that entity;

8. Contracts with electric utilities, gas utilities, telephone companies, and railroads, except that it is understood and agreed that these entities may only install their work to a demarcation point, *e.g.*, a telephone closet or utility vault, the location of which is determined prior to construction and employees of such entities shall not be used to replace employees performing Program Work pursuant to this Agreement;

9. Contracts for installation of information technology that are not otherwise Program Work;

10. Task Orders or Work Orders issued under JOCS or Requirements Contracts that do not exceed $250,000, and JOCS or Requirements Contracts where the monetary value of such contracts predominantly involves such Task Orders or Work Orders;

11. Contracts that predominantly involve Minor Repair work, as defined in Article 2, Section 1(F) above. Such work is to be paid under the applicable prevailing wage law for service or maintenance work;

12. Up to five percent (5%) of work performed by certified MWBE

subcontractors on prime contracts that are valued at $25,000,000 or more and for which participation goals are set forth in the contract and where such MWBE subcontractor is not signatory to any Schedule "A" agreement ("Exempt Work"). Exempt Work shall be no more than $500,000 or 15% (whichever is greater) of the value of the subcontracts for work in any particular union's jurisdiction under any prime contract; and

13. On-site work performed on purchased equipment, which is required by the manufacturer to be performed by its staff or by its selected contractors as a condition of the continued effectiveness of the equipment warranty.

SECTION 2. TIME LIMITATIONS

In addition to falling within the scope of Article 3, Section 1, to be covered by this Agreement, Program Work must be (1) advertised and let for bid after the effective date of this Agreement, and (2) let for bid prior to December 31, 2024, the expiration date of this Agreement. It is understood that this Agreement, together with all of its provisions, shall remain in effect for all such Program Work until completion, even if not completed by the expiration date of the Agreement. If Program Work otherwise falling within the scope of Article 3, Section 1 is not let for bid by the expiration date of this Agreement, this Agreement may be extended to that work by mutual agreement of the parties.

SECTION 3. EXCLUDED EMPLOYEES

The following persons are not subject to the provisions of this Agreement, even though performing Program Work:

A. Superintendents, supervisors (except field surveyors on construction contracts, general and forepersons specifically covered by a craft's Schedule "A" agreement are included), engineers, professional engineers and/or licensed architects engaged in inspection and testing, quality control/assurance personnel, timekeepers, mail carriers, clerks, office workers, messengers,

guards, technicians, non-manual employees, and all professional, engineering, administrative and management persons;

B. Employees of the Agency, New York City, or any other municipal or State agency, authority or entity, or employees of any other public employer, even though working on the project site while covered Program Work is underway;

C. Employees and entities engaged in off-site manufacture, modifications, repair, maintenance, assembly, painting, handling or fabrication of project components, materials, equipment or machinery, or involved in deliveries to and from the Program site, except to the extent they are lawfully included in the bargaining unit of a Schedule "A" agreement;

D. Employees of the Construction Manager (except that in the event the Agency engages a Contractor to serve as Construction Manager, then those employees of the Construction Manager performing manual, on site construction labor will be covered by this Agreement);

E. Employees engaged in on-site equipment warranty work including installation, repair or maintenance unless employees are already working on the site and are certified to perform warranty work;

F. Employees engaged in geophysical testing other than boring for core samples;

G. Employees engaged in laboratory, specialty testing, or inspections, pursuant to a professional services agreement between the Agency, or any of the Agency's other professional consultants, and such laboratory, testing, inspection or surveying firms;

H. Employees engaged in on-site maintenance of installed equipment or systems which maintenance is awarded as part of a contract that includes Program Work, but which maintenance occurs after installation of such equipment or system and is not directly related to construction services; and

I. Employees who perform work classified as Minor Repairs, and routine service and/or maintenance work.

SECTION 4. NON-APPLICATION TO CERTAIN ENTITIES

This Agreement shall not apply to those parents, affiliates, subsidiaries, or other joint or sole ventures of any Contractor which do not perform Program Work. It is agreed that this Agreement does not have the effect of creating any joint employment, single employer or alter ego status among the Agency (including in its capacity as Construction Manager) or any Contractor. The Agreement shall further not apply to any New York City or other municipal or State agency, authority, or entity other than a listed Agency and nothing contained herein shall be construed to prohibit or restrict the Agency or its employees, or any State, New York City or other municipal or State authority, agency or entity and its employees, from performing on or off-site work related to Program Work.

As the contracts involving Program Work are completed and accepted, the Agreement shall not have further force or effect on such items or areas except where inspections, additions, repairs, modifications, check-out and/or warranty work are assigned in writing (copy to Local Union involved) by the Agency (or Construction Manager) for performance under the terms of this Agreement.

ARTICLE 4 - UNION RECOGNITION AND EMPLOYMENT

SECTION 1. PRE-HIRE RECOGNITION

The Contractors recognize the signatory Unions as the sole and exclusive bargaining representatives of all employees who are performing on-site Program Work, with respect to that work.

SECTION 2. UNION REFERRAL

A. The Contractors agree to request, employ and hire craft employees, including

Program Hires as defined in Article 2, Section 1(I), for Program Work covered by this Agreement through the job referral systems and hiring halls established in the Local Unions' area CBAs set forth in Schedule "A". Notwithstanding this, Contractors shall have sole right to determine the competency of all referrals; to determine the number of employees required; to select employees for layoff (subject to Article 5, Section 3); and the sole right to reject any applicant referred by a Local Union, subject to the show-up payments. In the event that a Local Union does not fill any request for qualified employees within a 48-hour period after such requisition is made by a Contractor (Saturdays, Sundays and holidays excepted), a Contractor may employ qualified applicants from any other available source. In the event that the Local Union does not have a job referral system, the Contractor shall give the Local Union first preference to refer applicants, subject to the other provisions of this Article. The Contractor shall notify the Local Union of craft employees hired for Program Work within its jurisdiction from any source other than referral by the Union. Any employee hired by a Contractor because a Local Union does not fill a request for qualified employees within a 48 hour period (Saturdays, Sundays and holidays excepted) are not covered by this Agreement for purposes of Article 11, Section 2, unless they are or become a member or agency shop fee payor of an affiliated Union.

B. A Contractor may request by name, and the Local will honor, referral of persons who have applied to the Local for Program Work ("Core Employees") and who meet the following qualifications:

(1) possess any license required by New York State law for the Program Work to be performed;

(2) have worked a total of at least 1000 hours in the Construction field during the prior 3 years; and

(3) were on the Contractor's active payroll for at least 60 out of the 180 calendar days prior to the contract award.

No more than twelve per centum (12%) of the employees covered by this Agreement, per Contractor by craft, shall be hired through the special provisions above. Under this provision, name referrals begin with the eighth employee needed and continue on that same basis.

C. Notwithstanding Section 2(B), above, certified MWBE contractors for which participation goals are set forth in New York City Administrative Code §6-129, that are not signatory to any Schedule "A" CBAs, with subcontracts valued at or under two-million dollars ($2,000,000), may request by name, and the Local will honor, referral of the second (2nd), fourth (4th), sixth (6th), and eighth (8th) Core Employee, who have applied to the Local for Program Work and who meet the following qualifications:

(1) possess any license required by New York State law for the Program Work to be performed;

(2) have worked a total of at least 1000 hours in the Construction field during the prior 3 years; and

(3) were on the Contractor's active payroll for at least 60 out of the 365 calendar days prior to the contract award.

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

SECTION 3. NON-DISCRIMINATION IN REFERRALS

The Council represents that each Local Union hiring hall and referral system will be operated in a non-discriminatory manner and in full compliance with all applicable federal, state and local laws and regulations which require equal employment opportunities. Referrals shall not be affected in any way by the rules, regulations, bylaws, constitutional provisions or any other aspects or obligations of union membership, policies or requirements and shall be subject to such other conditions as are established in this Article. No employment applicant shall be discriminated

against by any referral system or hiring hall because of the applicant's union membership, or lack thereof.

SECTION 4. MINORITY, FEMALE, LOCAL AND SECTION 3 REFERRALS

In the event a Local Union either fails, or is unable to refer qualified minority or female applicants in percentages equaling the workforce participation goals adopted by the City and set forth in the Agency's (or, if applicable, Construction Manager's) bid specifications, within 48 hours of the request for same, the Contractor may employ qualified minority or female applicants from any other available source.

The Local Unions agree to prioritize the referral of Program Hires in accordance with Article 13 and to the extent consistent with the law, rules applicable to the union referral systems and joint apprentice programs. Those unions that do not currently provide for zip code preferences in their referral systems will undertake to implement such preferences consistent with this Agreement and their governing documents. Please see Exhibit "C" for a non-exhaustive list of eligible zip codes. Employees from these zip codes that are already on a contractor's workforce, including Core Employees, and referral of apprentices, in accordance with Article 13, Section 1(A) below, shall count towards the referral goals of this Section.

For any Program Work that may become subject to requirements under Section 3 of the Housing and Urban Development Act of 1968, as amended by the Housing and Community Development Act of 1992, and any rules, including new or revised rules, that may be published thereunder, the Local Unions acknowledge the Section 3 obligations of the Construction Manager or Contractor, as applicable, and agree to the zip code and NYCHA preferences described above to help implement this Article in a manner that would allow the Construction Manager or Contractor to meet its Section 3 obligations to the greatest extent feasible, and to post any required notices in the manner required by Section 3. The parties also acknowledge that the Construction Manager

and Contractor may also fulfill its Section 3 requirements on Program Work by promoting opportunities for excluded employees, as defined by Article 3, Section 3 of this Agreement, on Program Work and, to the extent permitted by Section 3, by promoting opportunities for craft and other employees on non-Program Work.

SECTION 5. CROSS AND QUALIFIED REFERRALS

The Local Unions shall not knowingly refer to a Contractor an employee then employed by another Contractor working under this Agreement. The Local Unions will exert their utmost efforts to recruit sufficient numbers of skilled and qualified crafts employees to fulfill the requirements of the Contractor.

SECTION 6. CRAFT FOREPERSONS AND GENERAL FOREPERSONS

The selection of craft forepersons and/or general forepersons and the number of forepersons required shall be solely the responsibility of the Contractor except where otherwise provided by specific provisions of an applicable Schedule "A" CBA, and provided that all craft forepersons shall be experienced and qualified journeypersons in their trade as determined by the appropriate Local Union. All forepersons shall take orders exclusively from the designated Contractor representatives. Craft forepersons shall be designated as working forepersons at the request of the Contractor, except when an existing local CBA prohibits a foreperson from working when the craft persons, they are leading exceed a specified number.

SECTION 7. ON CALL REPAIR REFERRALS

A. When an Agency awards a contract under this Agreement that requires the Contractor to have employees available on short notice to make time-sensitive repairs with such contract requiring the Contractor to respond within as little as two hours from the time the Contractor is contacted by the Agency ("On Call, Repair Contract"), the Contractor will, within ten (10) days of being awarded an On Call, Repair Contract subject to this Agreement, notify the

appropriate affiliated Union that would perform the work for a contractor that the Contractor has been awarded such a contract and immediately enter into good faith negotiations with such relevant affiliated Union to establish a procedure to receive time sensitive referrals from such affiliated Union(s).

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

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

2. The relevant affiliated Unions shall prepare a list of individuals eligible and prepared for referral on an immediate basis to respond to the on call repair contractor, which may include the affiliated Unions' service, repair and maintenance division workers where appropriate for repairs that can be made within 24 to 48 hours and paid at the appropriate prevailing wage rates for service and repair or maintenance work. Such list shall be provided to and in the possession of the designated-on call repair contact person for the affiliated Union and available for immediate reference.

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

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

the contract shall be possible.

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

ARTICLE 5 - UNION REPRESENTATION

SECTION 1. LOCAL UNION REPRESENTATIVE

Each Local Union representing on-site employees shall be entitled to designate in writing (copy to Contractor involved and Construction Manager) one representative, and/or the Business Manager, who shall be afforded access to the Program Worksite during such time as bargaining unit work is occurring and subject to otherwise applicable policies pertaining to visitors to the site.

SECTION 2. STEWARDS

A. Each affiliated Union shall have the sole discretion to designate any journey person as a Steward and an alternate Steward. The Union shall notify the Owner and/or Construction Manager as well as the Contractor of the identity of the designated Steward (and alternate) prior to the assumption of such duties. Stewards shall not exercise supervisory functions and will receive the regular rate of pay for their craft classifications. All Stewards shall be working Stewards.

B. In addition to their work as an employee, the Steward shall have the right to receive complaints or grievances and to discuss and assist in their adjustment with the Contractor's appropriate supervisor. Each Steward shall be concerned with the employees of the Steward's trade and, if applicable, subcontractors of their Contractor, but not with the employees of any other trade Contractor. No Contractor shall discriminate against the Steward in the proper performance of Union duties.

C. The Stewards shall not have the right to determine when overtime shall be worked, or who shall work overtime except pursuant to a Schedule "A" CBA provision providing procedures for the equitable distribution of overtime.

SECTION 3. LAYOFF OF A STEWARD

Contractors agree to notify the appropriate Union 24 hours prior to the layoff of a Steward, except in cases of discipline or discharge for just cause. If a Steward is protected against layoff by a Schedule "A" provision, such provision shall be recognized to the extent the Steward possesses the necessary qualifications to perform the work required, except in cases of discipline or discharge for just cause. In any case in which a Steward is discharged or disciplined for just cause, the Local Union involved shall be notified immediately by the Contractor.

ARTICLE 6 - MANAGEMENT'S RIGHTS

SECTION 1. RESERVATION OF RIGHTS

Except as expressly limited by a specific provision of this Agreement, Contractors retain full and exclusive authority for the management of their operations including, but not limited to, the right to: direct the work force, including determination as to the number of employees to be hired and the qualifications therefore; the promotion, transfer, layoff of its employees; require compliance with the directives of the Agency including standard restrictions related to security and access to the site that are equally applicable to Agency employees, guests, or vendors; or the discipline or discharge for just cause of its employees; assign and schedule work; promulgate

reasonable Program Work rules that are not inconsistent with this Agreement or rules common in the industry and are reasonably related to the nature of work; and, the requirement, timing and number of employees to be utilized for overtime work. No rules, customs, or practices which limit or restrict productivity or efficiency of the individual, as determined by the Contractor, Agency and/or Construction Manager and/or joint working efforts with other employees shall be permitted or observed.

SECTION 2. MATERIALS, METHODS & EQUIPMENT

There shall be no limitation or restriction upon the Contractor's choice of materials, techniques, methods, technology or design, or, regardless of source or location, upon the use and installation of equipment, machinery, package units, pre-cast, pre-fabricated, pre-finished, or pre-assembled materials or products, tools, or other labor-saving devices. Contractors may, without restriction, install or use materials, supplies or equipment regardless of their source; provided, however, that where there is a Schedule "A" that includes a lawful union standards and practices clauses, then such clause as set forth in Schedule "A" agreements will be complied with, unless there is a lawful Agency specification (or specification issued by a Construction Manager which would be lawful if issued by the Agency directly) that would specifically limit or restrict the Contractor's choice of materials, techniques, methods, technology or design, or, regardless of source or location, upon the use and installation of equipment, machinery, package units, pre-cast, pre-fabricated, pre-finished, or pre-assembled materials or products, tools, or other labor-saving devices, and which would prevent compliance with such Schedule "A" clause. The on-site installation or application of such items shall be performed by the craft having jurisdiction over such work; provided, however, it is recognized that other personnel having special qualifications may participate, in a supervisory capacity, in the installation, check-off or testing of specialized or

unusual equipment or facilities as designated by the Contractor. There shall be no restrictions as to work which is performed off-site for Program Work.

ARTICLE 7 - WORK STOPPAGES AND LOCKOUTS

SECTION 1. NO STRIKES-NO LOCK OUT

There shall be no strikes, sympathy strikes, picketing, work stoppages, slowdowns, hand billing, demonstrations or other similar disruptive activity at the Program Work site for any reason by any Union or employee against any Contractor or employer. There shall be no other Union or concerted or employee activity which disrupts or interferes with the operation of the Program Work or the objectives of the Agency at any Program Work site. In addition, failure of any Union or employee to cross any picket line established by any Union, signatory or non-signatory to this Agreement, or the picket or demonstration line of any other organization, at or in proximity to a Program Work site where the failure to cross disrupts or interferes with the operation of Program Work is a violation of this Article. Should any employees breach this provision, the Unions will use their best efforts to try to immediately end that breach and return all employees to work. There shall be no lockout at a Program Work site by any signatory Contractor, Agency or Construction Manager.

SECTION 2. DISCHARGE FOR VIOLATION

A Contractor may discharge any employee violating Section 1, above, and any such employee will not be eligible thereafter for referral under this Agreement for a period of 100 days.

SECTION 3. NOTIFICATION

If a Contractor contends that any Union has violated this Article, it will notify the Local Union involved advising of such fact, with copies of the notification to the Council. The Local Union shall instruct and order, the Council shall request, and each shall otherwise use their best efforts to cause, the employees (and where necessary the Council shall use its best efforts to cause the Local Union), to immediately cease and desist from any violation of this Article. If the Council

complies with these obligations, it shall not be liable for the unauthorized acts of a Local Union or its members. Similarly, a Local Union and its members will not be liable for any unauthorized acts of the Council. Failure of a Contractor or the Construction Manager to give any notification set forth in this Article shall not excuse any violation of Section 1 of this Article.

SECTION 4. EXPEDITED ARBITRATION

Any Contractor or Union alleging a violation of Section 1 of this Article may utilize the expedited procedure set forth below (in lieu of, or in addition to, any actions at law or equity that may be brought).

A. A party invoking this procedure shall notify J.J. Pierson or Richard Adelman; who shall alternate (beginning with Arbitrator J.J. Pierson) as Arbitrator under this expedited arbitration procedure. If the Arbitrator next on the list is not available to hear the matter within 24 hours of notice, the next Arbitrator on the list shall be called. Copies of such notification will be simultaneously sent to the alleged violator and Council.

B. The Arbitrator shall thereupon, after notice as to time and place to the Contractor, the Local Union involved, the Council and the Construction Manager, hold a hearing within 48 hours of receipt of the notice invoking the procedure if it is contended that the violation still exists. The hearing will not, however, be scheduled for less than 24 hours after the notice required by Section 3, above.

C. All notices pursuant to this Article may be provided by telephone, telegraph, hand delivery, or fax, confirmed by overnight delivery, to the Arbitrator, Contractor, Construction Manager and Local Union involved. The hearing may be held on any day including Saturdays or Sundays. The hearing shall be completed in one session, which shall not exceed 8 hours duration (no more than 4 hours being allowed to either side to present their case and conduct their cross examination) unless otherwise agreed. A failure of any Union or Contractor to attend the hearing

shall not delay the hearing of evidence by those present or the issuance of an award by the Arbitrator.

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

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

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

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

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

SECTION 5. ARBITRATION OF DISCHARGES FOR VIOLATION

Procedures contained in Article 9 shall not be applicable to any alleged violation of this Article, with the single exception that an employee discharged for violation of Section 1, above,

may have recourse to the procedures of Article 9 to determine only if the employee did, in fact, violate the provisions of Section 1 of this Article; but not for the purpose of modifying the discipline imposed where a violation is found to have occurred.

ARTICLE 8 - LABOR MANAGEMENT COMMITTEE

SECTION 1. SUBJECTS

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

SECTION 2. COMPOSITION

The LMC shall be jointly chaired by a designee of the Agency and the President of the Council. It may include representatives of the Local Unions and Contractors involved in the issues being discussed. The parties shall mutually designate an MWBE representative to participate in appropriate Committee discussions. The Committee may conduct business through mutually agreed upon sub-committees.

ARTICLE 9 - GRIEVANCE & ARBITRATION PROCEDURE

SECTION 1. PROCEDURE FOR RESOLUTION OF GRIEVANCES

Any question, dispute or claim arising out of, or involving the interpretation or application of this Agreement (other than jurisdictional disputes or alleged violations of Article 7, Section 1) shall be considered a grievance and shall be resolved pursuant to the exclusive procedure of the steps described below, provided, in all cases, that the question, dispute or claim arose during the term of this Agreement. Grievances shall include the City contract number and the Program Work

address; such information is posted at the work site if already commenced and is available in the City Record and Notice to Proceed for projects not already commenced.

Local Union grievances as to whether a scope of work is included or excluded from this Agreement shall be submitted to the LMC in the first instance rather than Step 1 below. To be timely, such notice must be given no later than five days prior to the bid opening date advertised in the City Record and bid documents for that contract, or any adjourned date publicly noticed if the grievance is challenging a determination by an Agency that the contract is not subject to this Agreement. Compliance with this limit shall operate as a statute of limitations and shall be a condition precedent to arbitration. For other grievances as to contractor and/or subcontractor scope of work issues, notice of such challenges shall be submitted to the LMC within 7 calendar days after the act, occurrence or event giving rise to the grievance. If the scope of work grievance is not resolved within 21 days of its submission to the LMC, then the grievance may proceed directly to Step 3 below.

Step 1:

(a) When any employee covered by this Agreement feels aggrieved by a claimed violation of this Agreement, the employee shall, through the Local Union business representative or job steward give notice of the claimed violation to the work site representative of the involved Contractor and the Construction Manager. To be timely, such notice of the grievance must be given within 7 calendar days after the act, occurrence or event giving rise to the grievance. The business representative of the Local Union or the job steward and the work site representative of the involved Contractor shall meet and endeavor to adjust the matter within 7 calendar days after timely notice has been given. If they fail to resolve the matter within the prescribed period, the grieving party, may, within 7 calendar days thereafter, pursue Step 2 of the grievance procedure by serving the involved Contractor with written copies of the grievance setting forth a description of the claimed

violation, the date on which the grievance occurred, and the provisions of the Agreement alleged to have been violated. Grievances and disputes settled at Step 1 are non-precedential except as to the specific Local Union, employee and Contractor directly involved unless the settlement is accepted in writing by the Construction Manager (or designee) as creating a precedent.

(b) Should any signatory to this Agreement have a dispute (excepting jurisdictional disputes or alleged violations of Article 7, Section 1) with any other signatory to this Agreement and, if after conferring, a settlement is not reached within 7 calendar days, the dispute shall be reduced to writing and proceed to Step 2 in the same manner as outlined in subparagraph (a) for the adjustment of employee grievances.

Step 2:

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

Step 3:

(a) If the grievance shall have been submitted but not resolved in Step 2, any of the participating Step 2 entities may, within 21 calendar days after the initial Step 2 meeting, submit the grievance in writing (copies to other participants, including the Construction Manager or designee) to the BCTC. In the event the matter is not resolved at Step 2, either J.J. Pierson or Richard Adelman, who shall act, alternately (beginning with Arbitrator J.J. Pierson), as the Arbitrator under this procedure, shall be designated at the Step 2 hearing and the BCTC will notify

the arbitrator of his designation. After such notification by the BCTC, the local demanding arbitration shall within a reasonable time request the arbitrator to schedule the matter for an arbitration hearing date. The Labor Arbitration Rules of the American Arbitration Association shall govern the conduct of the arbitration hearing, at which all Step 2 participants shall be parties. The decision of the Arbitrator shall be final and binding on the involved Contractor, Local Union and employees and the fees and expenses of such arbitrations shall be borne equally by the involved Contractor and Local Union.

(b) Failure of the grieving party to adhere to the time limits set forth in this Article shall render the grievance null and void. These time limits may be extended only by written consent of the Construction Manager (or designee), involved Contractor and involved Local Union at the particular step where the extension is agreed upon. The Arbitrator shall have authority to make decisions only on the issues presented to him and shall not have the authority to change, add to, delete or modify any provision of this Agreement.

SECTION 2. LIMITATION AS TO RETROACTIVITY

No arbitration decision or award, with the exception of those related to compliance with requirements to pay prevailing wages and supplements in accordance with federal or State law, may provide retroactivity of any kind exceeding 60 calendar days prior to the date of service of the written grievance on the Construction Manager and the involved Contractor or Local Union.

SECTION 3. PARTICIPATION BY AGENCY AND/OR CONSTRUCTION MANAGER

The Agency and Construction Manager (or such other designee of the Agency) shall be notified by the involved Contractor of all actions at Steps 2 and 3 and, at its election, may participate in full in all proceedings at these Steps, including Step 3 arbitration.

ARTICLE 10 - JURISDICTIONAL DISPUTES

SECTION 1. NO DISRUPTIONS

There will be no strikes, sympathy strikes, work stoppages, slowdowns, picketing or other disruptive activity of any kind arising out of any jurisdictional dispute. Pending the resolution of the dispute, the work shall continue uninterrupted and as assigned by the Contractor. No jurisdictional dispute shall excuse a violation of Article 7.

SECTION 2. ASSIGNMENT

All Program Work assignments shall be made by the Contractor to unions affiliated with the BCTC consistent with the New York Plan for the Settlement of Jurisdictional Disputes ("New York Plan") and its Greenbook decisions, if any. Where there are no applicable Greenbook decisions, assignments shall be made in accordance with the provisions of the New York Plan and local industry practice.

SECTION 3. NO INTERFERENCE WITH WORK

There shall be no interference or interruption of any kind with the Program Work while any jurisdictional dispute is being resolved. The work shall proceed as assigned by the Contractor until finally resolved under the applicable procedure of this Article. The award shall be confirmed in writing to the involved parties. There shall be no strike, work stoppage or interruption in protest of any such award.

ARTICLE 11 - WAGES AND BENEFITS

SECTION 1. CLASSIFICATION AND BASE HOURLY RATE

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

SECTION 2. EMPLOYEE BENEFITS

A. The Contractors agree to pay on a timely basis contributions on behalf of all employees covered by this Agreement to those established jointly trusteed employee benefit funds designated in the applicable CBA in Schedule "A" (in the appropriate Schedule "A" amounts), provided that such benefits are required to be paid on public works under any applicable prevailing wage law. Bona fide jointly trusteed fringe benefit plans established or negotiated through collective bargaining during the life of this Agreement may be added if similarly required under applicable prevailing wage law. Contractors, not otherwise contractually bound to do so, shall not be required to contribute to benefits, trusts or plans of any kind which are not required by the prevailing wage law provided, however, that this provision does not relieve Contractors signatory to local collective bargaining agreement with any affiliated union from complying with the fringe benefit requirements for all funds contained in the CBA. Furthermore, employees that may remain unaffiliated with any local union at the completion of their employment under the terms of this Agreement may apply for any distributions to which they may be entitled from the funds in accordance with the applicable rules and governing documents of the unions and the employee benefit funds that they have participated in under the terms of this Agreement.

B. 1. Notwithstanding Section 2 (A) above, and subject to 2 (B)(2) below, Contractors who designate Core Employees pursuant to Article 4, Section 2 (B) and (C) that are not signatory to a Schedule "A" agreement and who maintain bona fide private benefit plans that satisfy the requirements of Section 220 of the New York State Labor Law, may satisfy the above benefit obligation with respect to those employees by providing those employees with coverage under their private benefit plans (to the extent consistent with Section 220). The total benefit payments to be made on behalf of each such employee must be equal to the total Section 220 supplement amount and any shortfall must be paid by cash supplement to the employee.

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

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

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

D. 1. To the extent consistent with New York City's Procurement Policy Board Rules with respect to prompt payment, as published at www.nyc.gov/ppb, §4-06(e), and in consideration of the unions' waiver of their rights to withhold labor from a contractor or subcontractor delinquent in the payment of fringe benefits contributions ("Delinquent Contractor"); the Agency agrees that where any such union and/or fringe benefit fund shall notify the Agency, the General Contractor, and the Delinquent Contractor in writing with back-up documentation that the Delinquent Contractor has failed to make fringe benefit contributions to it as provided herein and the Delinquent Contractor shall fail, within ten (10) calendar days after receipt of such notice, to furnish either proof of such payment or notice that the amount claimed by the union and/or fringe benefit fund is in dispute, the Agency shall withhold from amounts then or thereafter becoming due and payable to the General Contractor an amount equal to that portion of such payment due to the General Contractor that relates solely to the work performed by the Delinquent Contractor which the union or fringe benefit fund claims to be due it, and shall remit the amount when and so withheld to the fringe benefit fund and deduct such payment from the amounts then otherwise due and payable to the General Contractor, which payment shall, as between the General Contractor and the Agency, be deemed a payment by the Agency to the General Contractor; provided however, that in any month, such withholding shall not exceed the amount contained in the General Contractor's monthly invoice for work performed by the Delinquent Contractor. The union or its employee benefit funds shall include in its notification of delinquent payment of fringe benefits only such amount it asserts the Delinquent Contractor failed to pay on the specific project against which the claim is made and the union or its employee benefit funds may not include in such notification any amount such Delinquent Contractor may have failed to pay on any other City or non-City project.

2. In addition, where a union or employee benefit fund gives notice to the City that a Contractor is Delinquent as defined in subsection 2(D)(1) above and the City determines that the

notice includes appropriate back-up documentation that the Contractor is delinquent, the City will promptly, but not later than twenty (20) days after receipt of the notice, provide a copy of said notice to City Agencies. In the event the City determines there is insufficient back-up documentation, it will notify the appropriate union and/or fringe benefit fund promptly, but not later than twenty (20) days after receipt of the Delinquency Notice, and shall include notice of what additional documentation is requested. Any determination by the City that there is insufficient back-up must be reasonable. This provision is intended to enhance compliance with the prevailing wage law and this Agreement with respect to the payment of fringe benefits and is not intended as a substitute for the resolution of a disputed claim pursuant to any applicable law or agreement.

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

E. In the event the General Contractor or Delinquent Contractor shall notify the Agency as above provided that the claim of the union or fringe benefit fund is in dispute, the Agency shall withhold from amounts then or thereafter becoming due and payable to the General Contractor an amount equal to that portion of such payment due to the General Contractor that relates solely to the work performed by the Delinquent Contractor that the union and/or fringe benefit fund claims

to be due it, pending resolution of the dispute pursuant to the union's Schedule "A" agreement, and the amount shall be paid to the party or parties ultimately determined to be entitled thereto, or held until the Delinquent Contractor and union or employee benefit fund shall otherwise agree as to the disposition thereof; provided however, that such withholding shall not exceed the amount contained in the General Contractor's monthly invoice for work performed by the Delinquent Contractor. In the event the Agency shall be required to withhold amounts from a General Contractor for the benefit of more than one fringe benefit fund, the amounts so withheld in the manner and amount prescribed above shall be applied to or for such fund in the order in which the written notices of nonpayment have been received by the Agency, and if more than one such notice was received on the same day, proportionately based upon the amount of the union and/or fringe benefit fund claims received on such day. Nothing herein contained shall prevent the Agency from commencing an interpleader action to determine entitlement to a disputed payment in accordance with section one thousand six of the civil practice law and rules or any successor provision thereto.

F. Payment to a fringe benefit fund under this provision shall not relieve the General Contractor or Delinquent Contractor from responsibility for the work covered by the payment. Except as otherwise provided, nothing contained herein shall create any obligation on the part of the Agency to pay any union or fringe benefit fund, nor shall anything provided herein serve to create any relationship in contract or otherwise, implied or expressed, between the union/fund and/or fringe benefit and the Agency.

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

SECTION 1. WORK WEEK AND WORKDAY

A. The standard work week shall consist of 40 hours of work at straight time rates, Monday through Friday, 8 hours per day, plus ½ hour unpaid lunch period. The standard work week may be reduced to 35 or 37 ½ hours of work at straight time rates, Monday to Friday, 7 or 7

½ hours per day, plus ½ hour unpaid lunch period in those limited circumstances where the City states in the bid documents that the Contractor will not be given access to the site to accommodate an 8 hour day. The 8 hour, 7 ½ hour or 7-hour workday must be established at the commencement of the project and may not be altered by the Contractor.

B. In accordance with project needs, there shall be flexible start times with advance notice from Contractor to the Union. The Day Shift shall commence between the hours of 6:00 a.m. and 9:00 a.m. and shall end between the hours of 2:30 p.m. and 5:30 p.m., for an 8-hour day, and up to 7:30 p.m. for a 10-hour day. The Evening Shift shall commence between the hours of 3:00 p.m. and 6:00 p.m., unless different times are necessitated by the Agency's phasing plans on specific projects. The Night Shift shall commence between the hours of 11:00 p.m. and 2:00 a.m., unless different times are necessitated by the Agency's phasing plans on specific projects. Subject to the foregoing, starting and quitting times shall occur at the Program Work site designated by the Contractor.

C. Scheduling - Except as provided above, Monday through Friday is the standard work week; 8 hours of work plus ½ hour unpaid lunch. Notwithstanding any other provision of this Agreement, a Contractor may schedule a four-day work week, 10 hours per day ("4/10") at straight time rates, plus a ½ hour unpaid lunch, at the commencement of the job.

D. Notice - Contractors shall provide not less than 5 days prior notice to the Local Union involved as to the work week and work hour schedules to be worked or such lesser notice as may be mutually agreed upon.

SECTION 2. OVERTIME

Overtime shall be paid for any work (i) over an employee's regularly scheduled work day, i.e., work over eight (8) hours in a day where 5/8s is scheduled, work over ten (10) hours in a day where 4/10s is scheduled, or work over seven (7) or seven and one half (7½) hours where such

hours are scheduled pursuant to Article 12, section 1(A) and (ii) over forty (40) hours in a week, or over thirty five (35) or thirty seven and one-half (37 ½) where such hours are scheduled pursuant to Article 12, section 1(A). Overtime shall be paid at time and one half (1½) Monday through Saturday. All overtime work performed on Sunday and Holidays will be paid pursuant to the applicable Schedule "A". There shall be no stacking or pyramiding of overtime pay under any circumstances. There will be no restriction upon the Contractor's scheduling of overtime or the nondiscriminatory designation of employees who shall be worked, including the use of employees, other than those who have worked the regular or scheduled work week, at straight time rates. The Contractor shall have the right to schedule work so as to minimize overtime or schedule overtime as to some, but not all, of the crafts and whether or not of a continuous nature.

SECTION 3. SHIFTS

A. Flexible Schedules - Scheduling of shift work, including Saturday and Sunday work, shall be within the discretion of the Contractor in order to meet Program Work schedules and existing Program Work conditions including the minimization of interference with the mission of the Agency. It is not necessary to work a day shift in order to schedule a second or third shift, or a second shift in order to schedule a third shift, or to schedule all of the crafts when only certain crafts or employees are needed. Shifts must have prior approval of the Agency or Construction Manager and must be scheduled with not less than five workdays' notice to the Local Union or such lesser notice as may be mutually agreed upon.

B. Second and/or Third Shifts - The second shift shall start between 3 p.m. and 6 p.m. and the third shift shall start between 10 p.m. and 2 a.m., subject to different times necessitated by the Agency phasing plans on specific projects. There shall be no reduction in shift hour work. With respect to second and third shift work there shall be a 5% shift premium, or the rate required by the applicable prevailing wage laws, whichever is less. No other premium or other payments for such

work shall be required unless such work is in excess of the employee's regularly scheduled work week, i.e., forty (40) hours in the week or thirty five (35) or thirty seven and one half (37 ½) pursuant to Article 12, Section 1(A). All employees within the same classification performing Program Work will be paid at the same wage rate regardless of the shift or work, subject only to the foregoing provisions.

C. Flexible Starting Times - Shift starting times will be adjusted by the Contractor as necessary to fulfill Program Work requirements subject to the notice requirements of paragraph A.

SECTION 4. HOLIDAYS

A. Schedule - There shall be nine (9) recognized holidays on the project:

New Year's Day	
Martin Luther King Day	President's Day
Memorial Day	Veteran's Day
Labor Day	Thanksgiving Day
Independence Day	Christmas Day

All said holidays shall be observed on the calendar date except those holidays which occur on Saturday shall be observed on the previous Friday and those that occur on Sunday shall be observed on the following Monday.

B. Payment - Regular holiday pay, if any, for work performed on such a PLA recognized holiday shall be in accordance with the applicable Schedule "A" for work performed on a holiday, even where the PLA holiday differs from the CBA holidays.

C. Exclusivity - No holidays other than those listed in Section 4(A) above shall be recognized or observed.

SECTION 5. MAKE-UP DAYS

When severe weather, power failure, fire or natural disaster or other similar circumstances beyond the control of the Contractor prevent work from being performed on a regularly scheduled weekday, the Contractor may schedule a Saturday make-up day (or Friday make-up day in the case of a 4/10 schedule) and such time shall be scheduled and paid as if performed on a weekday. Any other Saturday work shall be paid at time and one-half (1½). The Contractor shall notify the Local Union on the missed day or as soon thereafter as practicable if such a make-up day is to be worked.

SECTION 6. REPORTING PAY

A. Employees who report to the work location pursuant to their regular schedule and who are not provided with work shall be paid two hours reporting pay at straight time rates. An employee whose work is terminated early by a Contractor due to severe weather, power failure, fire or natural disaster of for similar circumstances beyond the Contractor's control, shall receive pay only for such time as is actually worked. In other instances, in which an employee's work is terminated early (unless provided otherwise elsewhere in this Agreement), the employee shall be paid for their full shift. Contractors shall not be permitted to call, text or email or voicemail employees in advance of their regularly scheduled shift starting time to avoid reporting pay. Notwithstanding the above, in the event that the National Weather Service issues a weather advisory for the area in which the work location is situated, and the entire project is shut down as a result of the Weather Advisory, the Contractor shall be permitted to speak to employees no less than four (4) hours in advance of their shift starting time, unless the Local Union consents to a shorter notice in writing, to advise them not to report to work due to the National Weather Service advisory, and employees who are so notified shall not receive two (2) hours reporting pay if they report to the work location. The Contractor shall make every effort to notify each employee directly and confirm that notification has been received. Voice, text, and email messages left for employees without

confirmation of delivery and receipt by employee do not constitute sufficient notice under this provision.

B. When an employee, who has completed their scheduled shift and left the Program Work site, is "called out" to perform special work of a casual, incidental or irregular nature, the employee shall receive overtime pay at the rate of time and one-half of the employee's straight time rate for hours actually worked.

C. When an employee leaves the job or work location of their own volition or is discharged for cause or is not working as a result of the Contractor's invocation of Section 7 below, they shall be paid only for the actual time worked.

D. Except as specifically set forth in this Article there shall be no premiums, bonuses, hazardous duty, high time or other special premium payments or reduction in shift hours of any kind.

E. There shall be no pay for time not actually worked except as specifically set forth in this Article and except where an applicable Schedule "A" requires a full weeks' pay for forepersons.

SECTION 7. PAYMENT OF WAGES

A. Termination - Employees who are laid off or discharged for cause shall be paid in full for that which is due them at the time of termination. The Contractor shall also provide the employee with a written statement setting forth the date of lay off or discharge.

SECTION 8. EMERGENCY WORK SUSPENSION

A Contractor may, if considered necessary for the protection of life and/or safety of employees or others, suspend all or a portion of Program Work. In such instances, employees will be paid for actual time worked, except that when a Contractor requests that employees remain at the job site available for work, employees will be paid for that time at their hourly rate of pay.

SECTION 9. INJURY/DISABILITY

An employee who, after commencing work, suffers a work-related injury or disability while performing work duties, shall receive no less than a full day's pay in accordance with the employee's regularly scheduled workday under Article 12, Section (1)(A). Further, the employee shall be rehired at such time as able to return to duties provided there is still Program Work available for which the employee is qualified and able to perform.

SECTION 10. TIME KEEPING

A Contractor may utilize systems to check employees in and out. Each employee must check in and out and sign a daily sign-in sheet, or other attendance methodology approved in writing by the Agency(s). The Contractor will provide adequate facilities for checking in and out in an expeditious manner.

SECTION 11. MEAL PERIOD

A Contractor shall schedule an unpaid period of not more than 1/2-hour duration at the work location between the 3rd and 5th hour of the scheduled shift. A Contractor may, for efficiency of operation, establish a schedule which coordinates the meal periods of two or more crafts, or which provides for staggered lunch periods within a craft or trade. If an employee is required to work through the meal period, the employee shall be compensated in a manner established in the applicable Schedule "A".

SECTION 12. BREAK PERIODS

There will be no rest periods, organized coffee breaks or other non-working time established during working hours. Individual coffee containers will be permitted at the employee's work location. Where 4/10s are being worked there shall be a morning and an afternoon coffee break.

ARTICLE 13 - APPRENTICES AND WORKFORCE DEVELOPMENT

SECTION 1. APPRENTICE RATIOS AND REFERRALS

A. Recognizing the need to maintain continuing supportive programs designed to develop adequate numbers of competent workers in the construction industry and to provide craft entry opportunities for minorities, women and economically disadvantaged non-minority males, Contractors will employ apprentices in their respective crafts to perform such work as is within their capabilities and which is customarily performed by the craft in which they are indentured. Contractors may utilize apprentices and such other appropriate classifications in the maximum ratio permitted by the New York State Department of Labor ("NYSDOL") or the maximum allowed per trade. Apprentices and such other classifications as are appropriate shall be employed in a manner consistent with the provisions of the appropriate Schedule "A" agreement. The parties encourage, as an appropriate source of apprentice recruitment consistent with the rules and operations of the affiliated unions' apprentice-programs, the use of the Edward J. Malloy Initiative for Construction Skills, Non-Traditional Employment for Women, New York Helmets to Hardhats, and Pathways to Apprenticeship (P2A). Should a Contractor request that apprentices be provided for Program Work, the referring Local Union shall comply with that request so long as it is consistent with the maximum ratios permitted by NYSDOL.

SECTION 2. WORKFORCE DEVELOPMENT

A. The parties to this Agreement recognize the mutual interest in increasing training and career opportunities for Program Hires. The parties are committed to (i) increasing opportunities for Program Hires in these zip codes in pre-apprenticeship and apprenticeship programs, and (ii) using the work opportunities provided by this Agreement to increase the career opportunities for qualified Program Hires, and (iii) to assure the continued availability of a skilled and qualified, readily available construction workforce for this program and future work. The parties agree to the Workforce Development Program set forth in Exhibit "D".

B. Specifically, the parties have established an initiative entitled HireNYC Construction Careers, which is an initiative to advance career opportunities for Program Hires.

C. The HireNYC Construction Careers initiative will work with the Mayor's Office of Workforce Development ("WKDEV") and its Workforce1 Centers to recruit Program Hires interested in employment in the construction industry.

D. HireNYC Construction Careers intends to capitalize on the work opportunities presented by this Agreement to create a pathway to career opportunities in the construction workforce. To this end the HireNYC Construction Careers initiative includes a workforce goal of at least 30% of all hours worked under this Agreement, including by subcontractors pursuant to Article 3, Section 1(B)(12), to be worked by workers residing within the specified zip codes or NYCHA housing. In order to encourage recruitment of new workers, HireNYC Construction Careers has established a goal that at least 30% of all of those hours are to be worked by apprentices from those zip codes or NYCHA housing.

E. The Contractors and Unions agree to cooperate and participate in the implementation of HireNYC Construction Careers to assist Program Hires with educational and training opportunities related to access to pre-apprenticeship, apprenticeship, and project work as set forth in this Agreement.

F. Reporting Requirements:

i. The Contractors shall report the residence zip code information on all certified payroll reports.

ii. The Local Unions, their referral systems, the affiliated pre-apprentice programs, and Contractors shall cooperate with any protocol developed for monitoring the HireNYC Construction Careers initiative.

iii. The Local Unions shall provide the WKDEV copies of the following

reports when such reports are submitted to NYSDOL: *Apprentice Training Recruitment Notification and Minimum Qualifications (AT 505)*, *Apprentice Training Program Affirmative Action Plan (AT 603), Apprenticeship Agreement (AT 401), or such alternate reporting system as the parties may negotiate during the term of this Agreement*.

G. The City and BCTC agree that no less than annually, the LMC shall review the implementation of HireNYC Construction Careers, as well as Program Hire opportunities afforded as a result of the initiative. The City and BCTC will collaborate to develop monitoring protocol for the purpose of measuring the success of HireNYC Construction Careers. The City and BCTC may, on mutual consent, modify the goals, procedures and protocols, as necessary to afford continued opportunity to Program Hires.

H. To facilitate the commitments set forth in this Agreement, each Local Union shall designate a HireNYC Construction Careers lead representative to work in partnership with WKDEV to implement these workforce and apprenticeship provisions within the union and across City construction contracts.

ARTICLE 14 - SAFETY PROTECTION OF PERSON AND PROPERTY
SECTION 1. SAFETY REQUIREMENTS

Each Contractor will ensure that applicable OSHA and safety requirements are at all times maintained on the Program Work site and the employees and Unions agree to cooperate fully with these efforts to the extent consistent with their rights and obligations under the law. Employees will cooperate with employer safety policies and will perform their work at all times in a safe manner and protect themselves and the property of the Contractor and Agency from injury or harm, to the extent consistent with their rights and obligations under the law. Failure to do so will be grounds for discipline, including discharge. The Construction Manager and/or Contractor may

adopt, and the Unions shall agree to, the Drug and Alcohol Testing Policy attached as Schedule "B".

SECTION 2. CONTRACTOR RULES

Employees covered by this Agreement shall at all times be bound by the reasonable safety, security, and visitor rules as established by the Contractors and the Construction Manager for Program Work. Such rules will be published and posted in conspicuous places throughout the Program Work sites. Any site security and access policies established by the Construction Manager or General Contractor intended for specific application to the construction workforce for Program Work and that are not established pursuant to an Agency directive shall be implemented only after notice to the BCTC and its affiliates and an opportunity for negotiation and resolution by the Labor Management Committee.

SECTION 3. INSPECTIONS

The Contractors and Construction Manager retain the right to inspect incoming shipments of equipment, apparatus, machinery and construction materials of every kind.

ARTICLE 15 - TEMPORARY SERVICES

SECTION 1.

Temporary services, i.e. all temporary heat, climate control, water, power and light, shall only be required upon the determination of the Agency or Construction Manager, and when used shall be staffed and assigned to the appropriate trade(s) with jurisdiction. Temporary services shall be provided by the appropriate Contractors' existing employees during working hours in which a shift is scheduled for employees of the Contractor. The Agency or Construction Manager may determine the need for temporary services requirements during non-working hours, and when used shall be staffed and assigned to the appropriate trades(s), and which may be limited to one person per applicable trade where practicable. There shall be no stacking of trades on temporary services,

provided this does not constitute a waiver of primary trade jurisdiction. In the event a temporary system component is claimed by multiple trades, the matter shall be resolved through the New York Plan for Jurisdictional Disputes.

ARTICLE 16 - NO DISCRIMINATION
SECTION 1. COOPERATIVE EFFORTS

The Contractors and Unions agree that they will not discriminate against any employee or applicant for employment because of creed, race, color, religion, sex, sexual orientation, national origin, marital status, citizenship status, disability, gender identity, age or any other status provided by law, in any manner prohibited by law or regulation.

SECTION 2. LANGUAGE OF AGREEMENT

Any words signifying any gender shall be interpreted to mean any or all gender identities.

ARTICLE 17 - GENERAL TERMS
SECTION 1. PROJECT RULES

A. The Construction Manager and the Contractors shall establish such reasonable Program Work rules that are not inconsistent with this Agreement or rules common in the industry and are reasonably related to the nature of work. These rules will be explained at the pre-job conference and posted at the Program Work sites and may be amended thereafter as necessary. Notice of amendments will be provided to the appropriate Local Union. Failure of an employee to observe these rules and regulations shall be grounds for discipline, including discharge. The fact that no order was posted prohibiting a certain type of misconduct shall not be a defense to an employee disciplined or discharged for such misconduct when the action taken is for cause.

B. The parties adopt and incorporate the BCTC's Standards of Excellence as annexed hereto as Exhibit "B".

SECTION 2. TOOLS OF THE TRADE

The welding/cutting torch and chain fall are tools of the trade having jurisdiction over the work performed. Employees using these tools shall perform any of the work of the trade. There shall be no restrictions on the emergency use of any tools or equipment by any qualified employee or on the use of any tools or equipment for the performance of work within the employee's jurisdiction.

SECTION 3. SUPERVISION

Employees shall work under the supervision of the craft foreperson or general foreperson.

SECTION 4. TRAVEL ALLOWANCES

There shall be no payments for travel expenses, travel time, subsistence allowance or other such reimbursements or special pay except as expressly set forth in this Agreement.

SECTION 5. FULL WORKDAY

Employees shall be at their work area at the starting time established by the Contractor, provided they are provided access to the work area. The signatories reaffirm their policy of a fair day's work for a fair day's wage.

SECTION 6. COOPERATION AND WAIVER

The Construction Manager, Contractors and the Unions will cooperate in seeking any NYSDOL, or any other government, approvals that may be needed for implementation of any terms of this Agreement. In addition, the Council, on their own behalf and on behalf of its participating affiliated Local Unions and their individual members, intend the provisions of this Agreement to control to the greatest extent permitted by law, notwithstanding contrary provisions of any applicable prevailing wage, or other, law and intend this Agreement to constitute a waiver of any such prevailing wage, or other, law to the greatest extent permissible only for work within the scope of this Agreement, including specifically, but not limited to those provisions relating to shift, night,

and similar differentials and premiums. This Agreement does not, however, constitute a waiver or modification of the prevailing wage schedules applicable to work not covered by this Agreement.

ARTICLE 18 - SAVINGS AND SEPARABILITY

SECTION 1. THIS AGREEMENT

In the event that the application of any provision of this Agreement is enjoined, on either an interlocutory or permanent basis, or is otherwise determined to be in violation of law, or if such application may cause the loss of project funding or any New York State Labor Law exemption for all or any part of the Program Work, the provision or provisions involved (and/or its application to particular Program Work, as necessary) shall be rendered, temporarily or permanently, null and void, but where practicable the remainder of the Agreement shall remain in full force and effect to the extent allowed by law (and to the extent no funding or exemption is lost), unless the part or parts so found to be in violation of law or to cause such loss are wholly inseparable from the remaining portions of the Agreement and/or are material to the purposes of the Agreement. In the event a court of competent jurisdiction finds any portion of the Agreement to trigger the foregoing, the parties will immediately enter into negotiations concerning the substance affected by such decision for the purpose of achieving conformity with the court determination and the intent of the parties hereto for contracts to be let in the future.

SECTION 2. THE BID SPECIFICATIONS

In the event that the Agency's (or Construction Manager's) bid specifications, or other action, requiring that a successful bidder (and subcontractor) become signatory to this Agreement is enjoined, on either an interlocutory or permanent basis, or is otherwise determined to be in violation of law, or may cause the loss of project funding or any New York State Labor Law exemption for all or any part of the Program Work, such requirement (and/or its application to particular Program Work, as necessary) shall be rendered, temporarily or permanently, null and void, but where practicable the Agreement shall remain in full force and effect to the extent allowed

by law and to the extent no funding or exemption is lost In such event, the Agreement shall remain in effect for contracts already bid and awarded or in construction only where the Agency and Contractor voluntarily accepts the Agreement. The parties will enter into negotiations as to modifications to the Agreement to reflect the court or other action taken and the intent of the parties for contracts to be let in the future.

SECTION 3. NON-LIABILITY

In the event of an occurrence referenced in Section 1 or Section 2 of this Article, neither the Agency, the Construction Manager, any Contractor, nor any Union shall be liable, directly or indirectly, for any action taken, or not taken, to comply with any court order or injunction, other determination, or in order to maintain funding or a New York State Labor Law exemption for Program Work. Bid specifications will be issued in conformance with court orders then in effect and no retroactive payments or other action will be required if the original court determination is ultimately reversed.

SECTION 4. NON-WAIVER

Nothing in this Article shall be construed as waiving the prohibitions of Article 7 as to signatory Contractors and signatory Unions.

ARTICLE 19 - FUTURE CHANGES IN SCHEDULE "A" AREA CONTRACTS

SECTION 1. CHANGES TO AREA CONTRACTS

A. Schedule "A" to this Agreement shall continue in full force and effect until the Contractor and/or Union parties to the Area CBAs that are the basis for the Schedule "A" notify the Mayor's Office of Contract Services ("MOCS"), Agency and Construction Manager in writing by providing a copy of the updated CBA(s) incorporating the changes agreed to in that Area CBA which are applicable to work covered by this Agreement and their effective dates.

B. It is agreed that any provisions negotiated into Schedule "A" CBAs will not apply to work under this Agreement if such provisions are less favorable to those uniformly required of

contractors for construction work normally covered by those agreements; nor shall any provision be recognized or applied on Program Work if it may be construed to apply exclusively, or predominantly, to work covered by this Agreement.

C. Any disagreement between signatories to this Agreement over the incorporation into Schedule "A" of provisions agreed upon in the renegotiation of Area CBAs shall be resolved in accordance with the procedure set forth in Article 9 of this Agreement.

SECTION 2. LABOR DISPUTES DURING AREA CONTRACT NEGOTIATIONS

The Unions agree that there will be no strikes, work stoppages, sympathy actions, picketing, slowdowns or other disruptive activity or other violations of Article 7 affecting the Program Work by any Local Union involved in the renegotiation of Area Local CBAs nor shall there be any lock-out on such Program Work affecting a Local Union during the course of such renegotiations.

ARTICLE 20 - WORKERS' COMPENSATION ADR

SECTION 1.

An Alternative Dispute Resolution ("ADR") program may be negotiated and participation in the ADR program will be optional by trade.

ARTICLE 21 - HELMETS TO HARDHATS

SECTION 1.

The Contractors and the Unions recognize a desire to facilitate the entry into the building and construction trades of veterans who are interested in careers in the building and construction industry. The Contractors and Unions agree to utilize the services of the New York City Helmets to Hardhats Program ("H2H") to serve as a resource for preliminary orientation, assessment of construction aptitude, referral to apprenticeship programs or hiring halls, counseling and mentoring, support network, employment opportunities and other needs as identified by the parties.

SECTION 2.

The Unions and Contractors agree to coordinate with H2H to create and maintain an integrated database of veterans interested in working on this project and of apprenticeship and employment opportunities for this project. To the extent permitted by law, the Unions will give credit to such veterans for bona fide, provable past experience.

2020 NYC AGENCY RENOVATION PROJECT LABOR AGREEMENT

IN WITNESS WHEREOF the parties have caused this Agreement to be executed and effective as of the ___ day of_____, _____.

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

BY: _____
Gary LaBarbera
President

FOR NEW YORK CITY

BY: _____
Dean Fuleihan
First Deputy Mayor

APPROVED AS TO FORM:

_____
ACTING CORPORATION COUNSEL
NEW YORK CITY

LIST OF SIGNATORY UNIONS
International Brotherhood of Boilermakers, Iron Ship Builders, Blacksmiths, Forgers and Helpers, AFL-CIO, Local Lodge No.5
Bricklayers and Allied Craftworkers, Local Union No. 1
Building Concrete & Excavating Laborers, Local Union No. 731
N.Y.C. and Vicinity District Council of Carpenters
Cement Masons, Local Union No. 780
Concrete Workers District Council No. 16
Asbestos, Lead & Hazardous Waste, Laborers Local Union No. 78
Construction & General Building Laborers Local Union No. 79
Derrickmen and Riggers Local Union No. 197
International Brotherhood of Electrical Workers, Local Union No. 3
International Union of Elevator Constructors, Local Union No. 1
Heat & Frost Insulators & Allied Workers, Local Union No. 12
Heat & Frost Insulators & Allied Workers, Local Union No. 12A
Pavers & Road Builders, Laborers Local Union No. 1010
New York State Iron Workers District Council
Structural Iron Workers, Local Union No. 40
Structural Iron Workers, Local Union No. 361
Mason Tenders District Council
Metallic Lathers & Reinforcing Ironworkers, Local No. 46
Ornamental Iron Workers, Local Union No. 580
Glaziers No. 1087, District Council 9
Painters, District Council No. 9
Metal Polishers, Local Union No. 8A-28A; District Council No. 9
Drywall Tapers Local Union No 1974, District Council 9
Bridge & Structural Steel Painters, Local Union No. 806, District Council 9
Operative Plasterers Local Union No. 262
UA Plumbers Local Union No. 1
Private Sanitation, Teamsters Local Union No. 813
Roofers & Waterproofers, Local Union No. 8
Sheet Metal Workers, Local Union No. 28
Sheet Metal Workers, Local Union No. 137
UA Steamfitters, Local Union No. 638
Teamsters, Local Union No. 282
Tile, Marble & Terrazzo, B.A.C. Local Union No. 7

SCHEDULE "A" - CBAs

Union	Current Agreement w/
Architectural and Ornamental Iron Workers Local Union 580, AFL-CIO	Allied Building Metal Industries, Inc.
Building, Concrete, Excavating & Common Laborers Local 731	Independent
Building, Concrete, Excavating & Common Laborers Local 731	Members of the General Contractors Association of New York, Inc.
Bricklayers Local 1 of the International Union of Bricklayers and Allied Craftworkers	Independent
District Council No. 9, I.U.P.A.T Glaziers Local 1087	Window and Plate Glass Dealers Association
Drywall Tapers and Painters Local 1974, affiliated with International Union of Painters & Allied Trades and Drywall Taping Contractor's Association & Association of Wall-Ceiling & Carpentry Industries NY, Inc.	Independent
Enterprise Association of Steamfitters and Apprentices Local 638	Mechanical Contractors Association of NY, Inc.
Enterprise Association of Steamfitters and Apprentices Local 638	Independent
Elevator Constructors Local 1 of NY and NJ	ThyssenKrupp Elevator Corporation
Elevator Constructors Local 1 of NY and NJ	Independent
Highway Road and Street Laborers Local Union 1010 of the District Council of Pavers and Road Builders of the Laborers' International Union of North America AFL-CIO	Independent
Highway Road and Street Laborers Local Union 1010 of the District Council of Pavers and Road Builders of the Laborers' International Union of North America AFL-CIO	Member of the General Contractors Association of New York, Inc.
International Association of Heat and Frost Insulators and Allied Workers Local No. 12 of New York City	Independent
International Association of Heat and Frost Insulators and Allied Workers Local No. 12 of New York City	The Insulation Contractors Association of New York City, Inc.
International Association of Heat and Frost Insulators and Allied Workers Local No. 12A of New York City	Independent

International Association of Heat and Frost Insulators and Allied Workers Local No. 12A of New York City	Environmental Contractors Association, Inc.
International Brotherhood of Boilermakers, Iron Ship Builders, Blacksmiths, Forgers and Helpers, AFL-CIO, Local Lodge No. 5	Boilermakers Association of Greater New York
Local Union No. 3 International Brotherhood of Electrical Workers, AFL-CIO	New York Electrical Contractors Association
International Brotherhood of Teamsters, Local 282, High Rise Contract	Building Contractors Association & Independents
Local 46 Metallic Lathers Union and Reinforcing Iron Workers of NY and Vicinity of the International Association of Bridge, Structural, Ornamental and Reinforcing Iron Workers	Cement League
Local 46 Metallic Lathers Union and Reinforcing Iron Workers of NY and Vicinity of the International Association of Bridge, Structural, Ornamental and Reinforcing Iron Workers	Independent
Local 8 Roofers, Waterproofers & Allied Workers	Roofing and Waterproofing Contractors Association of New York and Vicinity
Local Union 1 of the United Association of Journeymen and Apprentices of the Pipe Fitting Industry of the United States and Canada	Association of Contracting Plumbers of the City of New York
Local Union Number 40 & 361 of Bridge, Structural Ornamental and Reinforcing Iron Workers AFL-CIO	Independent
Mason Tenders DC & Laborers' International Union – Local 78 & 79	Building Contractors Association
Mason Tenders DC & Laborers' International Union – Local 78 & 79	Interior Demolition Contractors Association
Mason Tenders DC & Laborers' International Union – Local 78 & 79	Independent
Mason Tenders DC & Laborers' International Union – Local 78 & 79	NYCDCA
Mason Tenders DC & Laborers' International Union – Local 78 & 79	Environmental Contractors Association
Mason Tenders DC & Laborers' International Union – Local 78 & 79	ABMC

Operative Plasterers' and Cement Masons' International Association Local No. 262	Independent
Painters and Allied Trades AFL-CIO, District Council No. 9 (Painting and Protective Coatings CBA)	Independent
Painters and Allied Trades AFL-CIO, District Council No. 9 (Painting and Protective Coatings CBA)	The Association of Master Painters & Decorators of NY, Inc. and The Association of Wall, Ceiling & Carpentry Industries of NY, Inc. and The Window and Plate Glass Dealers Association
Sheet Metal Workers' International Association, Local 28	Sheet Metal & Air Conditioning Contractors Association of New York City, Inc.
Sheet Metal Workers' International Association, Local 137	The Greater New York Sign Association
Structural Steel and Bridge Painters Local 806, DC 9 International Union of Painters and Allied Trades, AFL-CIO	New York Structural Steel Painting Contractors Association
Teamsters Local 813	Independent
Teamsters Local 813	IESI NY Corporation
The Cement Masons' Union, Local 780	Cement League
The District Council of Cement and Concrete Workers (comprised of Local 6A; Local 18A and Local 20)	Cement League
The District Council of Cement and Concrete Workers (comprised of Local 6A; Local 18A and Local 20)	Independent
The District Council of New York City and Vicinity of the United Brotherhood of Carpenters and Joiners of America for Heavy Carpenters	GCA
The District Council of New York City and Vicinity of the United Brotherhood of Carpenters and Joiners of America for Dockbuilders Local No. 1556	Concrete Contractors of NY
The District Council of New York City and Vicinity of the United Brotherhood of Carpenters and Joiners of America for Dockbuilders Local 1556	Independent
The District Council of New York City and Vicinity of the United Brotherhood of Carpenters and Joiners of America for Millwright Local 740	Independent

The District Council of New York City and Vicinity of the United Brotherhood of Carpenters and Joiners of America for Timbermen Local 1556	Independent
The District Council of New York City and Vicinity of the United Brotherhood of Carpenters and Joiners of America for Timbermen Local 1556	GCA
The District Council of New York City and Vicinity of the United Brotherhood of Carpenters and Joiners of America for Heavy Carpenters	Independent
The District Council of New York City and Vicinity of the United Brotherhood of Carpenters and Joiners of America for Carpenters	Manufacturing Woodworkers Association of Greater New York Incorporated
The District Council of New York City and Vicinity of the United Brotherhood of Carpenters and Joiners of America	The Hoisting Trade Association of New York, Inc.
The District Council of New York City and Vicinity of the United Brotherhood of Carpenters and Joiners of America	The Test Boring Association
The District Council of New York City and Vicinity of the United Brotherhood of Carpenters and Joiners of America	Building Contractors Association
The District Council of New York City and Vicinity of the United Brotherhood of Carpenters and Joiners of America	The Association of Wall-Ceiling & Carpentry Industries of New York, Incorporated
The District Council of New York City and Vicinity of the United Brotherhood of Carpenters and Joiners	The Cement League
The District Council of NYC and Vicinity of the United Brotherhood of Carpenters and Joiners of America	New York City Millwright Association
The District Council of New York City and Vicinity of the United Brotherhood of Carpenters and Joiners	Greater New York Floor Covering Association
The District Council of New York City and Vicinity of the United Brotherhood of Carpenters and Joiners of America for Carpenters	Association of Architectural Metal & Glass

The District Council of New York City and Vicinity of the United Brotherhood of Carpenters and Joiners of America for Carpenters	Concrete Contractors of NY
The District Council of New York City and Vicinity of the United Brotherhood of Carpenters and Joiners of America for Building Construction Carpenters	Independent
The District Council of New York City and Vicinity of the United Brotherhood of Carpenters and Joiners of America for Local 2287	Independent
The District Council of New York City and Vicinity of the United Brotherhood of Carpenters and Joiners of America for Shop Carpenters	Independent
The Tile Setters and Tile Finishers Union of New York and New Jersey, Local 7 of the International Bricklayers and Allied Craftworkers	The Greater New York and New Jersey Contractors Association
United Derrickmen & Riggers Association, Local 197 of NY, LI, Westchester & Vicinity	Contracting Stonesetters Association Inc.
United Derrickmen & Riggers Association Local 197 of NY, LI, Westchester and Vicinity	Building Stone and Pre-cast Contractors Association

Exhibit A

Project Labor Agreement - Letter of Assent

Dear: _____

The undersigned party confirms that it agrees to be a party to and be bound by the New York Agency, Project Labor Agreement as such Agreement may, from time to time, be amended by the parties or interpreted pursuant to its terms. The terms of the Project Labor Agreement, its Schedules, Addenda and Exhibits are hereby incorporated by reference herein.

The undersigned, as a Contractor or Subcontractor (hereinafter Contractor) on the Project known as the NYC Agency Renovation and located at 80 Centre Str., New York, NY 10013 (hereinafter PROJECT), for and in consideration of the award to it of a contract to perform work on said PROJECT, and in further consideration of the mutual promises made in the Project Labor Agreement, a copy of which was received and is acknowledged, hereby:

(1) Accepts and agrees to be bound by the terms and conditions of the Agreement, together with any and all schedules; amendments and supplements now existing or which are later made thereto:

(2) Agrees to be bound by the legally established collective bargaining agreements; local trust agreements for employee benefit funds; and trust documents for joint apprentice programs as well as apprentice program rules and procedures but only to the extent of Program Work and as required by the PLA.

(3) Authorizes the parties to such local trust agreements to appoint trustees and successor trustees to administer the trust funds and hereby ratifies and accepts the trustees so appointed as if made by the Contractor but only to the extent of Program Work as required by the PLA.

(4) Certifies that it has no commitments or agreements that would preclude its full and complete compliance with the terms and conditions of said Agreement. The Contractor agrees to employ labor that can work in harmony with all other labor on the Project and shall require labor harmony from every lower tier subcontractor it has engaged or may engage to work on the Project. Labor harmony disputes/issues shall be subject to the Labor Management Committee provisions.

(5) Agrees to secure from any Contractor(s) (as defined in said Agreement) which is or becomes a Subcontractor (of any tier), to it, a duly executed Agreement to be Bound in from identical to this document.

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

Local Union: LOC # 3 , LOC # 79

Description of Work: Lighting & HVAC Energy Efficiency Upgrades at the Louis J. Lefkowitz Building

Contract Number(s): E17-0001

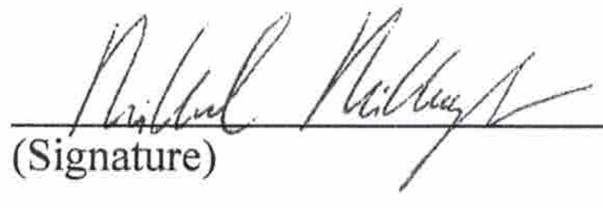
2020 NYC AGENCY RENOVATION PROJECT LABOR AGREEMENT

Dated: 07/21/2022

APS ELECTRIC, INC.
(Name of Contractor or subcontractor)

APS ELECTRIC, INC.
(Name of CM; GC; Contractor or Higher Level Subcontractor)

Mikhail Mikhaylov | President
(Authorized Officer & Title)

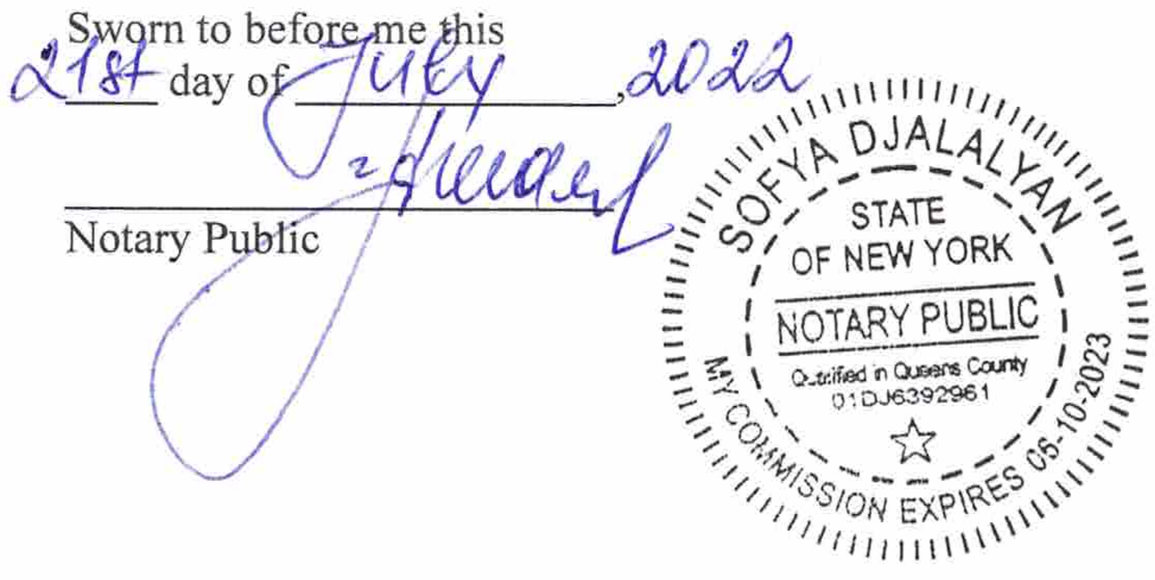

(Signature)

36-36 33rd Str., STE 205, LIC , NY 11106
(Address)

(718) 996-9187
(Phone) (Fax)

Contractor's State License #

Sworn to before me this
21st day of July, 2022



Notary Public

Exhibit B

NEW YORK CITY BUILDING AND CONSTRUCTION TRADES COUNCIL STANDARDS OF EXCELLENCE

The purpose of this Standard of Excellence is to reinforce the pride of every construction worker and the commitment to be the most skilled, most productive and safest workforce available to construction employers and users in the City of New York. It is the commitment of every affiliated local union to use our training and skills to produce the highest quality work and to exercise safe and productive work practices.

The rank and file members represented by the affiliated local unions acknowledge and adopt the following standards:

- ***Provide a full day's work for a full days pay;***
- ***Safely work towards the timely completion of the job;***
- ***Arrive to work on time and work until the contractual quitting time;***
- ***Adhere to contractual lunch and break times;***
- ***Promote a drug and alcohol free work site;***
- ***Work in accordance with all applicable safety rules and procedures;***
- ***Allow union representatives to handle job site disputes and grievances without resort to slowdowns, or unlawful job disruptions;***
- ***Respect management directives that are safe, reasonable and legitimate;***
- ***Respect the rights of co-workers;***
- ***Respect the property rights of the owner, management and contractors.***

The Unions affiliated with the New York City Building and Construction Trades Council will expect the signatory contractors to safely and efficiently manage their jobs and the unions see this as a corresponding obligation of the contractors under this Standard of Excellence. The affiliated unions will expect the following from its signatory contractors:

- ***Management adherence to the collective bargaining agreements;***
- ***Communication and cooperation with the trade foremen and stewards;***
- ***Efficient, safe and sanitary management of the job site;***
- ***Efficient job scheduling to mitigate and minimize unproductive time;***
- ***Efficient and adequate staffing by properly trained employees by trade;***
- ***Efficient delivery schedules and availability of equipment and tools to ensure efficient job progress;***
- ***Ensure proper blueprints, specifications and layout instructions and material are available in a timely manner***
- ***Promote job site dispute resolution and leadership skills to mitigate such disputes;***
- ***Treatment of all employees in a respectful and dignified manner acknowledging their contributions to a successful project.***

The affiliated unions and their signatory contractors shall ensure that both the rank and file members and the management staff shall be properly trained in the obligations undertaken in the Standard of Excellence.

Exhibit "C" - HireNYC Construction Careers

(August 2020 version)

Non-exhaustive list of zip codes where at least 15% of the individuals are below the federal poverty rate
(Zip codes within ~100 mile radius of NYC)

Zip Code	Borough	Neighborhood
10001	Manhattan	Midtown South
10002	Manhattan	Chinatown
10009	Manhattan	East Village
10025	Manhattan	Manhattan Valley
10026	Manhattan	Central Harlem
10027	Manhattan	Manhattanville
10029	Manhattan	East Harlem
10030	Manhattan	Central Harlem
10031	Manhattan	Hamilton Heights
10032	Manhattan	Inwood and Washington Heights
10033	Manhattan	Washington Heights
10034	Manhattan	Inwood
10035	Manhattan	East Harlem
10037	Manhattan	Central Harlem
10038	Manhattan	Lower Manhattan
10039	Manhattan	Central Harlem
10040	Manhattan	Inwood and Washington Heights
10301	Staten Island	St. George
10302	Staten Island	Port Richmond
10303	Staten Island	Mariner's Harbor
10304	Staten Island	Stapleton
10310	Staten Island	West Brighton
10451	Bronx	Concourse Village
10452	Bronx	High Bridge
10453	Bronx	University Heights
10454	Bronx	Mott Haven
10455	Bronx	Longwood
10456	Bronx	Melrose
10457	Bronx	Central Bronx
10458	Bronx	Bedford Park
10459	Bronx	Morrisania
10460	Bronx	East Tremont
10462	Bronx	Parkchester
10463	Bronx	Kingsbridge
10466	Bronx	Wakefield
10467	Bronx	Norwood
10468	Bronx	Bronx Park and Fordham
10472	Bronx	Unionport
10473	Bronx	Soundview
10474	Bronx	Hunts Point

PLA Exhibit C - HireNYC Construction Careers

(August 2020 version)

Non-exhaustive list of zip codes where at least 15% of the individuals are below the federal poverty rate

(Zip codes within ~100 mile radius of NYC)

Zip Code	Borough	Neighborhood
11101	Queens	Long Island City
11102	Queens	Northwest Queens
11106	Queens	Ravenswood
11203	Brooklyn	East Flatbush
11204	Brooklyn	Borough Park
11205	Brooklyn	Fort Greene
11206	Brooklyn	East Williamsburg
11207	Brooklyn	East New York
11208	Brooklyn	East New York / Cypress Hills
11211	Brooklyn	Williamsburg
11212	Brooklyn	Brownsville
11213	Brooklyn	Crown Heights
11214	Brooklyn	Bensonhurst
11216	Brooklyn	Central Brooklyn
11218	Brooklyn	Kensington
11219	Brooklyn	Borough Park
11220	Brooklyn	Sunset Park
11221	Brooklyn	Bushwick
11223	Brooklyn	Gravesend
11224	Brooklyn	Coney Island
11225	Brooklyn	Prospect Lefferts Gardens
11226	Brooklyn	Prospect Park South
11230	Brooklyn	Midwood
11232	Brooklyn	Sunset Park
11233	Brooklyn	Ocean Hill
11235	Brooklyn	Brighton Beach
11237	Brooklyn	Bushwick and Williamsburg
11239	Brooklyn	Starrett City
11354	Queens	Downtown Flushing
11355	Queens	Queensboro Hill
11368	Queens	South Corona
11369	Queens	East Elmhurst
11373	Queens	Elmhurst
11416	Queens	Southwest Queens
11417	Queens	Ozone Park
11418	Queens	Richmond Hill
11430	Queens	Ozone Park
11432	Queens	Jamaica Center
11433	Queens	South Jamaica
11435	Queens	Briarwood
11691	Queens	Far Rockaway
11692	Queens	Arverne

Data Source: 2013-2017 American Community Survey 5-year estimates

PLA Exhibit C - HireNYC Construction Careers

(August 2020 version)

Non-exhaustive list of zip codes where at least 15% of the individuals are below the federal poverty rate

(Zip codes within ~100 mile radius of NYC)

Zip Code	State	City or Town
06401	CT	Ansonia
06510	CT	New Haven
06511	CT	New Haven
06513	CT	New Haven
06515	CT	New Haven
06519	CT	New Haven
06604	CT	Bridgeport
06605	CT	Bridgeport
06607	CT	Bridgeport
06608	CT	Bridgeport
06610	CT	Bridgeport
06702	CT	Waterbury
06704	CT	Waterbury
06705	CT	Waterbury
06706	CT	Waterbury
06708	CT	Waterbury
06710	CT	Waterbury
06810	CT	Danbury
07002	NJ	Bayonne
07017	NJ	East Orange
07018	NJ	East Orange
07022	NJ	Fairview
07026	NJ	Garfield
07029	NJ	Harrison
07047	NJ	North Bergen
07050	NJ	Orange
07055	NJ	Passaic
07060	NJ	Plainfield
07062	NJ	Plainfield
07087	NJ	Union City
07093	NJ	West New York
07102	NJ	Newark
07103	NJ	Newark
07104	NJ	Newark
07105	NJ	Newark
07106	NJ	Newark
07107	NJ	Newark
07108	NJ	Newark
07111	NJ	Irvington
07112	NJ	Newark
07114	NJ	Newark
07201	NJ	Elizabeth
07202	NJ	Elizabeth
07206	NJ	Elizabethport
07208	NJ	Elizabeth
07304	NJ	Jersey City
07305	NJ	Jersey City
07306	NJ	Jersey City
07307	NJ	Jersey City
07310	NJ	Jersey City

PLA Exhibit C - HireNYC Construction Careers

(August 2020 version)

Non-exhaustive list of zip codes where at least 15% of the individuals are below the federal poverty rate

(Zip codes within ~100 mile radius of NYC)

Zip Code	State	City or Town
07501	NJ	Paterson
07502	NJ	Paterson
07503	NJ	Paterson
07504	NJ	Paterson
07505	NJ	Paterson
07513	NJ	Paterson
07514	NJ	Paterson
07522	NJ	Paterson
07524	NJ	Paterson
07608	NJ	Teterboro
07703	NJ	Fort Monmouth
07712	NJ	Asbury Park
07727	NJ	Farmingdale
07734	NJ	Keansburg
07740	NJ	Long Branch
07820	NJ	Allamuchy
07939	NJ	Lyons
08031	NJ	Bellmawr
08045	NJ	Lawnside
08095	NJ	Winslow
08102	NJ	Camden
08103	NJ	Camden
08104	NJ	Camden
08105	NJ	Camden
08110	NJ	Pennsauken
08217	NJ	Elwood
08224	NJ	New Gretna
08608	NJ	Trenton
08609	NJ	Trenton
08611	NJ	Trenton
08618	NJ	Trenton
08638	NJ	Trenton
08701	NJ	Lakewood
08751	NJ	Seaside Heights
08808	NJ	Broadway
08861	NJ	Perth Amboy
08901	NJ	New Brunswick
10545	NY	Maryknoll
10550	NY	Mount Vernon
10601	NY	White Plains
10701	NY	Yonkers
10703	NY	Yonkers
10705	NY	Yonkers
10801	NY	New Rochelle
10927	NY	Haverstraw
10932	NY	Howells
10940	NY	Middletown
10950	NY	Monroe
10952	NY	Monsey
10963	NY	Otisville
10977	NY	Spring Valley

PLA Exhibit C - HireNYC Construction Careers

(August 2020 version)

Non-exhaustive list of zip codes where at least 15% of the individuals are below the federal poverty rate

(Zip codes within ~100 mile radius of NYC)

Zip Code	State	City or Town
11096	NY	Inwood
11550	NY	Hempstead
11556	NY	Uniondale
11713	NY	Bellport
11798	NY	Wyandanch
11951	NY	Mastic Beach
11970	NY	South Jamesport
12401	NY	Kingston
12416	NY	Chichester
12419	NY	Cottekill
12427	NY	Elka Park
12428	NY	Ellenville
12432	NY	Glasco
12457	NY	Mount Tremper
12475	NY	Ruby
12489	NY	Wawarsing
12490	NY	West Camp
12491	NY	West Hurley
12516	NY	Copake
12550	NY	Newburgh
12561	NY	New Paltz
12583	NY	Tivoli
12589	NY	Wallkill
12594	NY	Wingdale
12601	NY	Poughkeepsie
12701	NY	Monticello
12725	NY	Claryville
12729	NY	Cuddebackville
12732	NY	Eldred
12733	NY	Fallsburg
12743	NY	Highland Lake
12747	NY	Hurleyville
12749	NY	Kauneonga Lake
12751	NY	Kiamesha Lake
12754	NY	Liberty
12758	NY	Livingston Manor
12759	NY	Loch Sheldrake
12762	NY	Mongaup Valley
12763	NY	Mountain Dale
12779	NY	South Fallsburg
12780	NY	Sparrow Bush
19007	PA	Bristol
19123	PA	Philadelphia
19125	PA	Philadelphia
19134	PA	Philadelphia
19135	PA	Philadelphia
19136	PA	Philadelphia
19137	PA	Philadelphia

Data Source: 2013-2017 American Community Survey 5-year estimates

EXHIBIT "D"
MEMORANDUM OF UNDERSTANDING

MEMORANDUM OF UNDERSTANDING, entered into as of _____, between the City of New York ("City") with an office located at City Hall, New York, NY 10007, the Building and Construction Trades Council of Greater New York and Vicinity ("BCTC"), on its behalf and on behalf of its affiliated unions, with its principal place of business located at 350 West 31s[t] Street, New York, NY 10001, and the Building Trade Employers' Association of New York City ("BTEA"), on its behalf and on behalf of its affiliated contractors, with its principal place of business located at 1325 Avenue of the Americas, New York, NY 10019.

WHEREAS, since 2009, the City, the BCTC, and the BTEA have entered into Memoranda of Understanding (each an "MOU"), contemporaneous to the City entering to Project Labor Agreements with the BCTC (each a "PLA"), setting goals on new apprenticeship opportunities for graduates of direct entry pre-apprenticeship programs for low-income New Yorkers, minorities, high school students, women, veterans, NYCHA residents, and qualified employees of Minority- and Women-Owned Business Enterprises ("M/WBEs") that become signatory to the union, and have provided increased opportunities for New Yorkers to have access to good union construction careers;

WHEREAS, in 2014, the City and the BCTC entered into an MOU related to the New York City Build It Back Program and committed to encourage contractors and subcontractors to employ Sandy-impacted residents and for the City and the BCTC to work together with community-based organizations to recruit and train New York City residents, with an emphasis on Sandy-impacted low income residents;

WHEREAS, the BCTC and the BTEA committed to: (i) promote the representation of veterans, women, high school graduates of the City's public schools, and New Yorkers in need of economic opportunity in apprenticeship programs jointly sponsored by BCTC unions and BTEA contractors, and (ii) improve workforce training and development for entrance into the construction industry;

WHEREAS, in 2014, the City of New York issued *Career Pathways: One City Working Together,* with a commitment to maximize local job opportunities through the City's contracts, and as such the City is committed to ensuring that low-income New Yorkers have access to the good jobs and careers that are created through the City's capital investments and through this MOU and contemporaneous PLA, the City the BCTC, and with the cooperation of the BTEA contractors can connect low-income New Yorkers to good prevailing wage construction careers;

WHEREAS, through this MOU and contemporaneous PLAs, the City, the BCTC, and the BTEA commit to recruiting in low-income communities, providing opportunities through pre-apprenticeship and apprenticeship programs for access to construction careers, and ensuring residents of low-income communities, including apprentices, are provided opportunities to work on publicly-funded and -assisted construction projects;

WHEREAS, pursuant to Local Law 1 of 2013, the City is also committed to its M/WBE program, and in partnership with the M/WBE Leadership Association seeks to encourage eligible companies to certify as M/WBEs, and provides a wide range of training and technical assistance to build the capacity of its certified companies to bid successfully for the City's contracts and subcontracts;

WHEREAS, an important element in the success of pre-apprenticeship and apprenticeship programs, as well as in creating work opportunities for contractors and sub-contractors in New York City, is the availability of work on publicly funded and assisted projects; and

WHEREAS, the parties to this MOU desire to publicly state their intentions with respect to apprenticeship programs and the creation of contracting and other economic opportunities in the construction industry.

NOW, THEREFORE, the City, the BCTC, and the BTEA state as follows:

1. Scope. This MOU:

a. States the intentions of the City, the BCTC, and the BTEA regarding:

a. the provision of opportunities in apprenticeship programs jointly sponsored by BCTC unions and BTEA contractors;
b. the City's application of apprenticeship requirements in City construction contracts from the time of execution through December 31, 2024;
c. the joint goal of the City, the BCTC, and the BTEA to create employment opportunities, including apprenticeships, in the construction industry; and

b. Shall terminate on December 31, 2024

2. To facilitate the commitments set forth in this MOU, each Local Union shall designate a HireNYC Construction Careers lead representative to work in partnership with the Mayor's Office of Workforce Development ("WKDEV") to implement these workforce and apprenticeship provisions within the union and across City construction contracts.

3. The BCTC and the BTEA shall work collaboratively with the City to reserve at least 500 new apprenticeship positions each calendar year through both the general recruitment and direct entry programs for New York City residents living in zip codes where at least 15% of the individuals in such zip code are below the federal poverty rate and NYCHA residents regardless of zip code.

4. The BCTC and BTEA shall work collaboratively with the City to reserve new apprenticeship positions each year for direct entry.

a. New York State Department of Labor ("NYSDOL") approved Direct Entry programs may be used by sponsors of Registered Apprenticeship programs as another way to bring apprentices into their programs. It is a tool to help sponsors reach underrepresented populations. Direct Entry provides individuals who successfully complete an apprenticeship preparation program, and who meet the minimum requirements for a NYS Registered Apprenticeship program, with the direct opportunity for an interview with the

sponsor of a program bypassing the general recruitment scheduled for the Apprentice Programs.

5. Apprenticeship programs jointly sponsored by Local Unions and employers affiliated with the BTEA shall, subject to approval by the NYSDOL and to the extent consistent with applicable consent decrees, court orders or similar mandates, reserve up to the following percentages of their new apprenticeships (some apprentices may be counted in more than one category) for direct entry each year:

a. 20% for graduates of New York City public high school who have completed pre-apprenticeship training provided by The Edward J. Malloy Initiative for Construction Skills ("C-SKILLS");

b. 10% for veterans of the U.S. Armed Forces who are referred by New York City Helmets to Hardhats ("NYC H2H"), provided, however, that any veterans whose qualifications allow them to enter unions as journeypersons shall be counted toward the fulfillment of this percentage;

c. 15% for women who have completed pre-apprenticeship training provided by Nontraditional Employment for Women ("NEW");

d. 10% for NYCHA and Section 8 residents who have completed pre-apprenticeship training provided by C-SKILLS, NEW, the NYCHA Resident Training Academy ("NRTA"), or Pathways to Apprenticeships ("P2A");

e. 10% for justice-involved individuals who have completed pre-apprenticeship training provided by C-SKILLS, NEW, NRTA, or P2A; and

f. 5% for qualified employees of certified minority- and women-owned business enterprises and other employers not signatory to collective bargaining agreements of unions affiliated with the BCTC which become signatory to such collective bargaining agreements, provided, however, that any such employees whose qualifications allow them to enter unions as journeypersons shall be counted toward the fulfillment of this percentage.

6. To help reach the goals set forth in paragraph 3, 4, and 5, the City, the BCTC and the BTEA will work cooperatively to identify and pursue appropriate sources of public and private funds and resources, as needed, to provide pre-apprenticeship training scaled to support the goals targeting at least seven hundred (700) pre-apprenticeship positions cumulatively for all above named direct entry programs each year. The City will help coordinate recruitment within the zip codes and target populations identified in paragraphs 3, 4 and 5.

7. The goals in Paragraphs 3, 4, and 5 are aggregate goals for apprenticeship programs jointly sponsored by the Local Unions and BTEA contractors to achieve on an annual basis through their general recruitments and direct entry programs. The City recognizes that different apprenticeship programs face different circumstances and

have varying capacities to meet the percentages set forth in each category; notwithstanding that, the BCTC and the BTEA agree to encourage and support meeting the goals in Paragraphs 3, 4, and 5, and to work with apprenticeship programs jointly sponsored by their affiliated unions and contractors to take affirmative steps to achieve that goal.

8. The City, BCTC, and BTEA acknowledge that on federally funded projects NYCHA, and the City on certain federally funded projects, must comply with Executive Order 11246 and federal regulations contained at 24 CFR Part 135 ("Section 3") regarding efforts to employ residents of NYCHA developments and other Section 3 populations.

9. The City, the BCTC, and the BTEA will jointly seek any necessary waivers from NYSDOL with respect to direct entry goals for the joint apprentice programs, as well as jointly support and encourage 100% participation of all affiliated joint apprentice programs.

10. Reporting.

    a. Each Local Union shall provide, or cause to be provided by their Apprentice Directors, copies of the following reports to WKDEV within thirty (30) days of the submission to NYSDOL:

        i. *Apprentice Training Recruitment Notification and Minimum Qualifications (AT 505)* submissions to NYSDOL;
        ii. *Apprentice Training Program Affirmative Action Plan (AT 603)* submissions to NYSDOL; and
        iii. *Apprenticeship Agreement (AT 401)* submissions to NYSDOL.

    b. Pre-apprenticeship programs funded in part by the City will provide quarterly reports, beginning at the end of the first quarter after the first class is held, to the WKDEV with detailed information as required by NYC's Workforce Common Metrics reporting for all individuals trained in all classes.

    c. On an annual basis, beginning on January 1, 2021, the City shall provide an electronic report to the BCTC that contains a list of contracts registered in the previous full fiscal year that were subject to either a City Project Labor Agreement or the Apprenticeship Directive. Such list shall contain the following for each contract:

        i. contracting agency
        ii. contract name;
        iii. prime contractor name;
        iv. registered dollar amount; and
        v. date of registration.

d. Upon mutual agreement, the parties may modify these reporting requirements, as needed.

11. City of New York Apprenticeship Directive. As a means of expanding the pool of work available to apprentices and graduates of state-approved apprenticeship programs providing opportunities to the groups of individuals designated in Paragraphs 3 and 5 above, the City states its intention to implement, as may be amended from time to time, the Directive, attached as Exhibit A. The Directive directs City agencies, for construction contracts where either (i) the cost estimate of the contract exceeds $3 million, or (ii) the cost estimate of the contract exceeds $2 million on a project with a cost estimate of at least $5 million, and for such other contracts as the bidding agency determines to be appropriate, to require the contractor and any of its subcontractors with subcontracts worth at least $2 million to have apprenticeship agreements appropriate for the type and scope of work to be performed that have been registered with, and approved by, the New York State Commissioner of Labor, and shall have passed any required probationary period and recertification established by the New York State DOL.

12. The City shall include a statement concerning the applicability of the Directive in every City Record notice of the solicitation or award of a contract for a public works project. Within five (5) days of the issuance of any waiver from the apprenticeship requirement, the City shall notify the BCTC and the BTEA, in writing or electronically, of the granting of such waiver and the reasons therefore.

13. The City, the BCTC, and the BTEA look forward to working together and with the contractor community in a spirit of cooperation and good will toward the goal that all New Yorkers from diverse backgrounds, particularly minorities, women, returning veterans, recent public high school graduates, NYCHA residents, individuals in need of economic opportunity, and justice-involved individuals, are well-prepared for participation in the workforce and can gain access to good careers in the construction industry, in both the private and public sectors.

For the City of New York

By: _____

First Deputy Mayor, Dean Fuleihan

For Building and Construction Trades Council of Greater New York and Vicinity

By: _____

Gary LaBarbera, President

For Building Trades Employers' Association of New York City

By: _____

Louis J. Coletti, President & CEO

SCHEDULE "B" - DRUG AND ALCOHOL POLICY

PREAMBLE

WHEREAS, [CONSTRUCTION MANAGER] ("Construction Manager"), for the construction project located at [PROJECT ADDRESS] ("Project") desires to provide for a safe, drug and alcohol-free work site for the Project;

WHEREAS, the parties have entered into a separate Project Labor Agreement for the Project and have agreed to negotiate in good faith a Project Drug & Alcohol Testing Policy;

WHEREAS, this Testing Policy is collectively negotiated between the Construction Manager and the New York City Building and Construction Trades Council ("Council") (the Construction Manager and BCTC are collectively referred to hereafter as the "Parties");

WHEREAS, the Parties each currently have respective drug and alcohol policies, including the Projects' Zero-Tolerance policy;

WHEREAS, the Parties desire to maximize project safety conditions for the Project personnel and public, as well as deter violations of the Parties' respective drug and alcohol policies;

NOW, THEREFORE, the Parties agree to this Policy as of the date hereof,

ARTICLE 1 - PARTIES

This Drug & Alcohol Testing Policy ("Policy") is hereby established by the Construction Manager and the Council, on behalf of itself and its affiliated local union members, and the signatory local unions on behalf of themselves and their members.

ARTICLE 2-GENERAL CONDITIONS

SECTION 2.1 - SUMMARY

In order to reinforce the Parties' respective drug and alcohol policies, including the Projects' zero tolerance policy regarding the prohibition of the use of drugs and alcohol, and to deter Project personnel from violating those policies, the Parties agree that all Project Personnel (defined later) will be required to submit to drug and/or alcohol testing randomly, post-accident, and for reasonable suspicion.

Any individual on site that violates this Policy is subject to disciplinary action, including, without limitation, loss of site access privileges.

SECTION 2.2 - REVOCATION OF PROJECT ACCESS PRIVILEGES

Any one of the following occurrences will result in the immediate revocation of a Project Personnel's project access privileges:

1. An individual is found selling or using drugs or alcohol, or otherwise is under the influence of drugs or alcohol, subject to the other terms of this Policy, on a Project Site;
2. An individual has been convicted under any criminal drug or alcohol

statute for a violation occurring in the workplace within the past two years;

3. An individual who refuses to abide by the Projects' drug and alcohol policy, or refuses to submit to a test in accordance with this Policy;

4. An individual who switches, adulterates, or in any way tampers with a specimen required to be submitted in accordance with this Policy.

SECTION 2.3 - DEFINITIONS

Confirmed Positive Test: The presence of drugs, drug metabolites, or alcohol in a person's body that equals or exceeds the established cut off levels as defined in Exhibit 1. For drugs, the sample will have undergone Laboratory screening and confirmation testing and must have been verified as positive by a Medical Review Officer. A positive test result for alcohol obtained through Evidential Breath Testing is considered a Confirmed Positive Test.

Employee Assistance Program (EAP): An EAP is generally considered a workplace-based, confidential program designed to help employees deal effectively with a variety of personal problems, and, of relevance to this policy, substance abuse problems. The EAP promotes assessments and short-term counseling. An EAP shall also include any similar education or rehabilitation program provided by the Councilor its respective members. The Project Personnel that are required to participate in the EAP shall be responsible for the cost of their consultation with an EAP and/or participation in any education or rehabilitation program.

Evidential Breath Testing Device (EBT): A device that is used to measure alcohol in the breath and which meets National Highway Traffic Safety Administration's specifications for precision and accuracy.

Laboratory: A laboratory that is SAMHSA (Substance Abuse and Mental Health Services Administration) certified for the testing of drugs.

Medical Review Officer (MRO): A licensed physician responsible for receiving laboratory results generated by an employer's drug testing plan who has knowledge of substance abuse disorders and medical training to interpret and evaluate a donor's confirmed positive test result together with his/her medical history and all other relevant information.

Previous Worker: All individuals whose employment relationship with the contractor, company or organization no longer exists.

Project Site: The construction area for respective Project.

Reasonable Suspicion: When a qualified trade contractor, the Developer or Construction Manager as set forth in Section 3.7, reasonably believes that an individual has violated this Policy. Reasonable suspicion is based upon (1) specific, current, behavioral or performance indicators, (2) the possible manufacture, distribution, consumption or possession of unauthorized drugs, drug paraphernalia, or alcohol, or (3) documented investigation by an agency retained by, or otherwise independent from, the Developer or Construction Manager.

SECTION 2.4 - INCLUDED SUBJECTS

This Policy shall cover all employees of the Owner, Construction Manager and Project

trade contractors, their subcontractors and any other of their respective personnel at any level that are performing any activity at a Project Site, inclusive of managers, superintendents and supervisors, except as specifically excluded by Section 2.5 of this Policy (collectively and singularly, "Project Personnel").

SECTION 2.5 - EXCLUDED SUBJECTS

The following persons are not subject to the provisions of this Policy:

- **A.** Employees and entities engaged in off-site manufacture, modifications, repair, maintenance, assembly, painting, handling or fabrication of components, materials, equipment or machinery;
- **B.** Vendors and employees of vendors engaged on a Project Site in equipment testing, inspection, training, warranty work, or engaged in corrections of defective or nonconforming work, unless such employees are expressly included in the bargaining unit of a local signatory to this Agreement;
- **C.** Employees engaged in ancillary work on a Project which is performed by third parties, such as electric utilities, gas utilities, telephone companies, and railroads, or any other work not constituting Project work;
- **D.** Employees of any governmental authority (state, local or otherwise);
- **E.** Employees and contractors engaged in work on the Project Site as part of due diligence or monitoring, which work is ancillary to Project work; and
- **F.** Emergency responders.

SECTION 2.6 - PRESCRIPTION AND NON-PRESCRIPTION DRUGS

The use of prescription drugs not prescribed directly to Project Personnel is prohibited, including the use of drugs prescribed to a spouse or domestic partner. The use of non-prescription drugs that are sold outside the United States and that contain substances that are illegal or require a prescription in the United States are prohibited, unless prescribed by a licensed physician.

SECTION 2.7 - SEARCHES

In order for the Construction Manager to ensure the safety of Project Personnel and for the Construction Manager to protect its assets, the Construction Manager shall have the right upon good cause (such as reasonable suspicion of a violation of this Policy) to conduct reasonable searches for alcohol, drugs and related paraphernalia anywhere within the boundaries of a Project Site. A search may include any assets owned or leased by any Project Personnel that is on a Project Site, including without limitation, vehicles, lockers, gang boxes, desks and personal property brought onto a Project Site, but excluding personal body searches or physical contact with employees.

ARTICLE 3 - DRUG & ALCOHOL TESTING

SECTION 3.1 - COLLECTION PROCESS

As of the execution date of this PLA, Project Personnel may be required to submit urine samples ("Preliminary Drug Screening") for the purpose of detecting the presence of drugs as part of the random, post-accident or reasonable suspicion testing, in accordance with

chain of custody protocols as established by Substance Abuse and Mental Health Services Administration (SAMHSA), utilizing an instant result test cup for Preliminary Drug Screenings, such testing is to be performed on-site by an independent service provider. The results from the instant result test cup will be considered preliminary. The sample will be sent to a SAMHSA certified testing laboratory for confirmation.

As of the date hereof, all Project Personnel will be required to submit to an Evidential Breath Test (EBT) for the purpose of detecting the presence of alcohol when submitting to random, post-accident or reasonable suspicion testing. Alcohol testing will not be conducted for pre-access testing.

SECTION 3.2 - NEGATIVE PRELIMINARY DRUG SCREENING

Project Personnel with a negative Preliminary Drug Screening will be considered conditionally accepted for Project site access, pending confirming laboratory results. Site access privileges will be revoked if the subsequent laboratory results determine that the sample has tested positive for drugs or that the sample has been adulterated.

SECTION 3.3 POSITIVE PRELIMINARY DRUG SCREENING

If the Preliminary Drug Screening indicates a positive result, the individual will not be allowed access to the Project Site. The sample will be sent to the certified laboratory for analysis and, if applicable, reviewed by the Medical Review Officer (MRO). If the laboratory confirmation results are also positive, the individual will be considered in violation of this Policy and their site access will be revoked for at least 30 days. If the laboratory confirmation results are negative, the Project Personnel's site access will not be revoked.

SECTION 3.4 CONFIRMED POSITIVE TEST RESULTS

A. POSITIVE DRUG TEST

A drug test is considered positive if the test results exceed the limits shown in Exhibit 1, which is attached hereto and incorporated herein by reference. The test will be confirmed through a second analysis process and reviewed by an MRO before results are reported. Project Personnel with confirmed positive drug test results will have their site access revoked. In case of a "false positive" result, any such Personnel shall be entitled to the reimbursement of any wages lost during the suspension caused by any such false positive result.

B. POSITIVE EBT

An EBT is considered positive if the test results exceed .04 BrAC, or as otherwise set forth in Exhibit 1. Project Personnel with a positive alcohol test result will be subject to the remedies set forth in Exhibit 1.

C. REINSTATEMENT OF SITE ACCESS PRIVILEGES

(a) Subject to section 3.4(C)(a) immediately below, if the site access of a Project Personnel has been revoked pursuant to this Policy, then any such person may request that their site access be reinstated after 30 days, provided that all of the following conditions are met to the reasonable satisfaction of the Construction Manager. :

1. The individual has provided proof of wellness from an accredited rehabilitation

facility or has provided proof that treatment isn't needed as attested to by a licensed health care provider specializing in the diagnosis and treatment of alcohol and drug abuse.

2. A current drug and alcohol test is obtained within three (3) days of the request for re-access to the site and proof of a negative test result has been received; and
3. The individual agrees to submit to multiple testing for two (2) full years from the date of gaining re-access to the project, the scheduling of which will be determined at the sole discretion of the Construction Manager. If all of these conditions have been met, the Construction Manager agrees that it will not unreasonably withhold their consent to any such request.

(b) Unlawful possession, concealment, use, purchase, sale, manufacture, dispensation or distribution of illegal drugs or un-prescribed controlled substances on the Project site will subject the Project Personnel Employee to immediate removal from the Project site and shall bar such Project Personnel Employee from returning for a minimum of three (3) months, which return shall, in any event, be subject to the reasonable approval by Construction Manager.

(c) All of the Parties agree that any such Project Personnel will only be entitled to any such reinstatement of site access privileges one time and that any subsequent violation of this Policy will result in the permanent termination of access to the Project Site.

SECTION 3.5 - RANDOM TESTING

A third-party provider designated by the Construction Manager will randomly select by an objective criteria a testing pool for random drug and/or alcohol testing from all Project Personnel with site access cards. Any individual selected for a random drug and/or alcohol test will be required to submit to an Evidential Breath Test (EBT) and/or drug test. Individuals may be tested more than once during any given time period. The Parties acknowledge and agree that an EBT may be required without a drug test and that a drug test may be required without an EBT, as solely determined by the Construction Manager.

If an individual is unable to attend the first scheduled random drug test as a result of being involved in a work-related task, such drug test will be rescheduled and will be completed at or before the conclusion of such employee's then current work shift. If the second drug test is missed for any reason, the incident will be reviewed by the Construction Manager, who shall have the right to terminate the site access privileges of any such Project Personnel until such time as that Project Personnel has complied with this Policy. If the individual refuses to take the test, their access privileges will be immediately terminated for cause.

SECTION 3.6 - POST ACCIDENT TESTING

After each work-related incident or injury requiring the services of a licensed health care provider, all Project Personnel involved with the incident will be required to submit to a drug and/or alcohol test immediately following the incident. In instances where emergency care is necessary, the drug and/or alcohol test shall be obtained by the care facility, if possible, within 24 hours after treatment is rendered. If more than 48 hours have passed before an injury is reported and treated by a licensed health care provider, an alcohol test will not be required.

In addition, any Project Personnel involved in a non-injury related incident at a Project Site

with damages at or in excess of $200 will be required to submit to a drug and/or alcohol test unless:

A. It is determined, after conducting an investigation and interviewing all employees involved and any witnesses, that the employee's performance can be completely discounted as a contributing factor to the incident; or
B. It is determined, after conducting an incident investigation and interviewing all employees and any witnesses that the incident was caused by inadequate equipment or system design, and/or premature failure of equipment or system components.

SECTION 3.7 - REASONABLE SUSPICION TESTING

All Project Personnel will be required to submit to a drug and/or alcohol test when there is reasonable suspicion the individual has violated this policy.

Reasonable suspicion includes, without limitation, the following:

A. Violent or irrational behavior;
B. Emotional or physical unsteadiness;
C. Sensory or motor-skill malfunctions;
D. Slurred speech;
E. The odor of alcohol or drugs on clothing or breath in conjunction with other indicators;
F. Possession of alcohol, unauthorized drugs or drug paraphernalia; or
G. Documented evidence of an independent investigation regarding Project Personnel's consumption of what is reasonably believed to be an alcoholic beverage or drugs in violation of the Project's policies and/or this Policy.

Reasonable suspicion testing may only be ordered by supervisory personnel that: (a) have been trained to recognize the above referenced factors; or (b) have received credible documentary evidence from an independent investigator that a Project Personnel has violated a drug and/or alcohol policy. It is agreed that any certified training program shall satisfy the training requirement.

SECTION 3.8 - PRIVACY CONSIDERATIONS

The Parties agree to use reasonable efforts to conduct any testing pursuant to this Policy in accordance with the privacy concerns of Project Personnel. To address these concerns, the Parties agree that:

1. The testing station(s) shall be screened off, or otherwise closed off from public view.
2. All documents and information regarding the testing, including test results, shall be maintained by the respective custodian(s) of record in accordance with their respective privacy policies, which any Project Personnel shall be entitled to review upon timely request.

3. The Parties agree to make a good faith effort to resolve any other privacy concern of Project Personnel regarding this Policy, provided that any such concerns do not interfere with the purpose of this Policy.

ARTICLE 4 – GRIEVANCE

SECTION 4.1 - REPRESENTED WORKERS

Nothing in this Policy shall restrict a member of a signatory local union from filing a grievance in accordance with the member's collective bargaining agreement or a Project Labor Agreement, provided that the grievance shall be limited to whether the removal of a member for violation of this Policy was conducted in compliance with the terms and conditions set forth herein.

SECTION 4.2 - HOLD HARMLESS

The Construction Manager agrees to hold harmless and indemnify the Union/Council and its representatives from any liability that may be incurred as a result of the Company's Drug and Alcohol Policy to the extent caused by the negligence or intentional misconduct of the Construction Manager.

IN WITNESS WHEREOF the parties have agreed to this Policy as of _____, 20___.

FOR [CONSTRUCTION MANAGER]

By: _____

Name: [INSERT NAME]_____

Title: [INSERT TITLE]_____

FOR GREATER NEW YORK CITY BUILDING TRADES COUNCIL

By: _____

Name: Gary LaBarbera _____

Title: President

EXHIBIT 1

CLASS OF DRUGS TESTED AND THEIR RESPECTIVE CUT-OFF LIMITS

The cut-off limits established are those recommended by the U.S. Department of Health and Human Services in their mandatory Guidelines for Federal Workplace Drug Testing Programs.

Drug Class	Screening Cut-Off Limit (ng/ml)	Confirmation Cut-off Limit (ng/ml)
Amphetamines	1000	500
Benzoylecgonine (Cocaine Metabolite)	300	150
Cannabinoids (THC)	50	15
*Opiates	2000	10
Phencyclidine (PCP)	25	25

Confirmation screening is done by means of GC/MS analysis.

*The GC/MS confirmation for opiates will be for both codeine and morphine separately. If morphine is equal to or greater than 2,000ng/ml then the GC/MS confirmation analysis for 6- acetylmorphine (6-MAM) is at a cut-off level of 10ng/ml.

Alcohol Screening

All Project Personnel will be required to submit to an EBT under the random, post-accident, and reasonable suspicion test arenas, for the purpose of detecting presence of alcohol. If this test supports a positive result for presence of alcohol, the Project Personnel will be considered in violation of this Policy.

If the results of the EBT are:

1. Above 0.001 BrAC, but at or below 0.020 BrAC, a second test will be conducted within approximately 15 minutes.
    - If the second BrAC test is less than the first BrAC, the results will be deemed negative and the Project Personnel may return to work, if there are no other outstanding issues.
- If the second BrAC is increasing, but below 0.04 BrAC, the results will be deemed negative, but the Project Personnel will be sent home for the day and the Construction Manager shall be notified. If a Project Personnel is sent home two times within a six-month period pursuant to this Section I, then any such Project Personnel shall be deemed to have tested positive and will be subject to the applicable remedies set forth in Section 2 below.

2. Above 0.02 BrAC, but below 0.06 BrAC, a second test will be conducted after approximately 15 minutes.

- Notwithstanding anything set forth above to the contrary, a Project Personnel may elect to voluntarily go home for the day instead of taking a second test and the results will be deemed negative, provided that any such Project Personnel may not voluntarily go home more than once within a twelve month period.
- If the second BrAC test is at or below 0.02 BrAC, the results will be deemed negative and the Project Personnel may return to work if there are no other outstanding issues.
- If the second BrAC test is above 0.020, but below 0.06, the results will be deemed positive, the Project Personnel will be sent home for the day and their site access will be revoked for at least five [5] calendar days and until such time as the Project Personnel has been evaluated by an EAP professional skilled in substance abuse and confirmed fit for duty.
- Any Project Personnel who is deemed positive two times within two years pursuant to this Section 2 will have their site access privileges terminated and will be entitled to the limited relief set forth in Section 3 .4(c) of the Policy.

3. At or above .06 BrAC, the Project Personnel will have their site access privileges terminated, after which they will be entitled to the limited relief set forth in Section 3.4(C) of the Policy.

CITY OF NEW YORK

DEPARTMENT OF
DESIGN AND CONSTRUCTION
DIVISION OF PUBLIC BUILDINGS

INFORMATION FOR BIDDERS

JULY 2019

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

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INFORMATION FOR BIDDERS

1. Description and Location of Work

The description and location of the work for which bids are requested are specified in Attachment 1, "Bid Information". Attachment 1 is included in the BID BOOKLET, VOLUME 1 OF 3.

2. Time and Place for Receipt of Bids

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

3. Definitions

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

4. Invitation For Bids and Contract Documents

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

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

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

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

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

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

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

5. Pre-Bid Conference

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

6. Agency Contact

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

7. Bidder's Oath

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

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

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

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

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

9. Examination of Proposed Contract

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

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

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

10. Form of Bid

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

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

11. Irrevocability of Bid

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

12. Acknowledgment of Amendments

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

13. Bid Samples and Descriptive Literature

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

14. Proprietary Information/Trade Secrets

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

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

15. Pre-Opening Modification or Withdrawal of Bids

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

16. Bid Evaluation and Award

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

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

17. Late Bids, Late Withdrawals and Late Modifications

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

18. Withdrawal of Bids.

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

19. Mistake in Bids

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

(B) Mistakes Discovered Before Award

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

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

(c) The bid was submitted in good faith and the bidder submits credible evidence that the mistake was a clerical error as opposed to a judgment error; and
(d) The error in the bid is actually due to an unintentional and substantial arithmetic error or an unintentional omission of a substantial quantity of work, labor, material or services made directly

in the compilation of the bid, which unintentional arithmetic error pr unintentional omission can be clearly shown by objective evidence drawn from inspection of the original work paper, documents, or materials used in the preparation of the bid sought to be withdrawn; and

(e) It is possible to place the agency in the same position as existed prior to the bid.

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

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

20. Low Tie Bids

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

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

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

21. Rejection of Bids

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

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

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

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

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

(D) When the Agency has determined that the Invitation for Bids is to be canceled and that use of negotiation is appropriate to complete the acquisition, the contracting officer may negotiate and award the Contract

without issuing a new solicitation, subject to the following conditions:

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

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

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

23. Affirmative Action and Equal Employment Opportunity

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

24. 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) Bid Security: Each bid must be accompanied by bid security in an amount and type specified in Attachment 1 (BID BOOKLET, VOLUME 1 OF 3). The bid security shall assure the City of New York of the

adherence of the bidder to its proposal, the execution of the Contract, and the furnishing of Performance and Payment Bonds by the bidder, if required in Attachment 1. Bid security shall be returned to the bidder as follows:

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

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

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

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

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

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

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

The Department of the Treasury of the United States advises that information concerning approved surety companies may be obtained as follows: (1) from the Government Printing Office at 215-364-6465; (2) through the Internet at https://www.fiscal.treasury.gov/surety-bonds/.

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

27. Failure to Execute Contract

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

28. Bidder Responsibilities and Qualifications

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

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

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

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

29. Employment Report

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

30. Labor Law Requirements

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

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

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

31. Insurance

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

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

32. Lump Sum Contracts

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

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

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

33. Unit Price Contracts

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

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

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

34. Excise Tax

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

35. Licenses and Permits

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

36. Multiple Prime Contractors

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

37. Locally Based Enterprise Requirements (LBE)

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

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

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

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

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

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

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

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

(2) The following documents shall be attached to the "LBE Participation Schedule":

(a) verification letters from each subcontractor listed in the "LBE Participation Schedule" stating that the LBE will enter into a formal agreement for work,
(b) certification documents of any proposed LBE subcontractor which is not on the LBE certified list, and
(c) copies of the certification letter of any proposed subcontractor which is an LBE.

(3) Documentation of good faith efforts to achieve the required LBE percentage shall include as appropriate but not limited to the following:

(a) attendance at prebid meetings, when scheduled by the agency, to advise bidders of contract requirements;

(b) advertisement where appropriate in general circulation media, trade association publications and small business media of the specific subcontracts that would be at least equal to the percentage goal for LBE utilization specified by the contractor;

(c) written notification to association of small, minority and women contractors soliciting specific subcontractors;

(d) written notification by certified mail to LBE firms that their interest in the contract is solicited for specific work items and their estimated values;

(e) demonstration of efforts made to select portions of the work for performance by LBE firms in order to increase the likelihood of achieving the stated goal;

(f) documented efforts to negotiate with LBE firms for specific subcontracts, including at a minimum:

(i) The names, address and telephone numbers of LBE firms that are contacted;

(ii) A description of the information provided to LBE firms regarding the plans and specifications for portions of the work to be performed;

(iii) Documentation showing that no reasonable price can be obtained from LBE firms;

(iv) A statement of why agreements with LBE firms were not reached;

(g) a statement of the reason for rejecting any LBE firm which the contractor deemed to be unqualified; and

(h) documentation of efforts made to assist the LBE firms contacted that needed assistance in obtaining required insurance.

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

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

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

38. Bid Submission Requirements

The Bid Submission Requirements are set forth in the BID BOOKLET, VOLUME 1 OF 3.

39. Comptroller's Certificate

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

40. Procurement Policy Board Rules

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

41. Viewing of Submitted Bid Documents

In accordance with NYC Procurement and Policy Board Rules, Section 3-02, the submitted bid documents will be available to view immediately after completion of the bid opening and by appointment for up to 72 hours after the bid opening.

42. DDC Safety Requirements

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

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

January 2020

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

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.

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 full-time 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

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 project-related 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).
3. Designate and identify a Project Safety Representative in the Site Safety Plan. The Contractor will immediately 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

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.

6. Develop a written Job Hazard Analysis (JHA) that identifies safety hazards and control methods for project 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.
7. Develop project specific safety procedures to protect employees, general public, and property during all construction activities for the duration of the project.
8. Ensure that all employees are aware of the hazards associated with the project through documented formal and informal training and/or other communications. Conduct and document 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

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,

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.

Site Safety Plan requirements: 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.

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.

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.

CITY OF NEW YORK

STANDARD CONSTRUCTION CONTRACT

March 2017

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CITY OF NEW YORK
STANDARD CONSTRUCTION CONTRACT

TABLE OF CONTENTS

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WITNESSETH:

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

CHAPTER I: THE CONTRACT AND DEFINITIONS

ARTICLE 1. THE CONTRACT

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

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

1.1.2 The Contract Drawings and Specifications;

1.1.3 The General Conditions and Special Conditions, if any;

1.1.4 The **Contract**;

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

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

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

ARTICLE 2. DEFINITIONS

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

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

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

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

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

2.1.5 **"City"** shall mean the City of New York.

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

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

2.1.8 **"Comptroller"** shall mean the Comptroller of the City of New York.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

CHAPTER II: THE WORK AND ITS PERFORMANCE

ARTICLE 3. CHARACTER OF THE WORK

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

ARTICLE 4. MEANS AND METHODS OF CONSTRUCTION

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

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

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

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

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

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

ARTICLE 5. COMPLIANCE WITH LAWS

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

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

5.3 Noise Control Code provisions.

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

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

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

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

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

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

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

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

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

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

5.4.2 Ultra Low Sulfur Diesel Fuel

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

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

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

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

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

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

5.4.3 Best Available Technology

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

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

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

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

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

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

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

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

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

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

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

5.4.5 Compliance

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

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

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

5.4.6 Reporting

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

ARTICLE 6. INSPECTION

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

CHAPTER III: TIME PROVISIONS

ARTICLE 8. COMMENCEMENT AND PROSECUTION OF THE WORK

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

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

ARTICLE 9. PROGRESS SCHEDULES

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

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

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

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

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

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

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

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

ARTICLE 10. REQUESTS FOR INFORMATION OR APPROVAL

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

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

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

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

11.1.1 Within fifteen (15) **Days** after the **Contractor** becomes aware or reasonably should be aware of each such condition, the **Contractor** must notify the **Resident Engineer** or **Engineer**, as directed by the **Commissioner**, in writing of the existence, nature and effect of such condition upon the approved progress schedule and the **Work**, and must state why and in what respects, if any, the condition is causing or may cause a delay. Such notice shall include a description of the construction activities that are or could be affected by the condition and may include any recommendations the **Contractor** may have to address the delay condition and any activities the **Contractor** may take to avoid or minimize the delay.

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

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

11.2 Failure of the **Contractor** to strictly comply with the requirements of Article 11.1.1 may, in the discretion of the **Commissioner**, be deemed sufficient cause to deny any extension of time on account of delay arising out of such condition. Failure of the **Contractor** to strictly comply with the requirements of both Articles 11.1.1 and 11.1.2 shall be deemed a conclusive waiver by the **Contractor** of any and all claims for damages for delay arising from such condition and no right to recover on such claims shall exist.

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

11.4 Compensable Delays

11.4.1 The **Contractor** agrees to make claim only for additional costs attributable to delay in the performance of this **Contrac**t necessarily extending the time for completion of the **Work** or resulting from acceleration directed by the **Commissioner** and required to maintain the progress schedule, occasioned solely by any act or omission to act of the **City** listed below. The **Contractor** also agrees that delay from any other cause shall be

compensated, if at all, solely by an extension of time to complete the performance of the **Work**.

11.4.1.1 The failure of the **City** to take reasonable measures to coordinate and progress the **Work** to the extent required by the **Contract**, except that the City shall not be responsible for the **Contractor's** obligation to coordinate and progress the **Work** of its **Subcontractors**.

11.4.1.2 Unreasonable delays attributable to the review of shop drawings, the issuance of change orders, or the cumulative impact of change orders that were not brought about by any act or omission of the **Contractor**.

11.4.1.3 The unavailability of the **Site** caused by acts or omissions of the **City**..

11.4.1.4 The issuance by the **Engineer** of a stop work order that was not brought about through any act or omission of the **Contractor**.

11.4.1.5 Differing site conditions or environmental hazards that were neither known nor reasonably ascertainable on a pre-bid inspection of the **Site** or review of the bid documents or other publicly available sources, and that are not ordinarily encountered in the **Project**'s geographical area or neighborhood or in the type of **Work** to be performed.

11.4.1.6 Delays caused by the **City's** bad faith or its willful, malicious, or grossly negligent conduct;

11.4.1.7 Delays not contemplated by the parties;

11.4.1.8 Delays so unreasonable that they constitute an intentional abandonment of the **Contract** by the **City**; and

11.4.1.9 Delays resulting from the **City's** breach of a fundamental obligation of the **Contract**.

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

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

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

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

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

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

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

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

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

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

11.6 Required Content of Submission of Statement of Delay Damages

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

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

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

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

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

11.7 Recoverable Costs

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

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

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

11.7.1.3 Reasonable rental value of necessary plant and equipment other than small tools, plus fuel/energy costs according to the applicable formula set forth in Articles 26.2.4 and/or 26.2.8, based on time and material records;

11.7.1.4 Additional insurance and bond costs;

11.7.1.5 Extended **Site** overhead, field office rental, salaries of field office staff, on-site project managers and superintendents, field office staff vehicles, **Project-**specific storage, field office utilities and telephone, and field office consumables;

11.7.1.6 Labor escalation costs based on actual costs;

11.7.1.7 Materials and equipment escalation costs based on applicable industry indices unless documentation of actual increased cost is provided;

11.7.1.8 Additional material and equipment storage costs based on actual documented costs and additional costs necessitated by extended manufacturer warranty periods; and

11.7.1.9 Extended home office overhead calculated based on the following formula:

(1) Subtract from the original **Contract** amount the amount earned by original contractual **Substantial Completion** date (not including change orders);

(2) Remove 15% overhead and profit from the calculation in item (1) by dividing the results of item (1) by 1.15;

(3) Multiply the result of item (2) by 7.25% for the total home office overhead;

(4) Multiply the result of item (3) by 7.25% for the total profit; and

(5) The total extended home office overhead will be the total of items (3) and (4).

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

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

11.7.3.1 Profit, or loss of anticipated or unanticipated profit, except as provided in Article 11.7.1.9;

11.7.3.2 Consequential damages, including, but not limited to, construction or bridge loans or interest paid on such loans, loss of bonding capacity, bidding opportunities, or interest in investment, or any resulting insolvency;

11.7.3.3 Indirect costs or expenses of any nature except those included in Article 11.7.1;

11.7.3.4 Direct or indirect costs attributable to performance of **Work** where the **Contractor**, because of situations or conditions within its control, has not progressed the **Work** in a satisfactory manner; and

11.7.3.5 Attorneys' fees and dispute and claims preparation expenses.

11.8 Any claims for delay under this Article 11 are not subject to the jurisdiction of the Contract Dispute Resolution Board pursuant to the dispute resolution process set forth in Article 27.

11.9 Any compensation provided to the **Contractor** in accordance with this Article 11 will be made pursuant to a claim filed with the **Comptroller**. Nothing in this Article 11 extends the time for the **Contractor** to file an action with respect to a claim within six months after **Substantial Completion** pursuant to Article 56.

ARTICLE 12. COORDINATION WITH OTHER CONTRACTORS

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

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

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

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

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

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

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

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

ARTICLE 13. EXTENSION OF TIME FOR PERFORMANCE

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

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

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

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

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

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

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

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

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

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

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

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

13.8 Application for Extension of Time:

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

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

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

13.8.1(c) Original total bid price;

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

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

13.8.1(f) The extension of time requested.

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

13.8.2(a) The nature of each alleged cause of delay in completing the **Work**;

13.8.2(b) The date upon which each such cause of delay began and ended and the number of **Days** attributable to each such cause;

13.8.2(c) A statement that the **Contractor** waives all claims except for those delineated in the application, and the particulars of any claims which the **Contractor** does not agree to waive. For time extensions for **Substantial Completion** and final completion payments, the application shall include a detailed statement of the dollar amounts of each element of claim item reserved; and

13.8.2(d) A statement indicating the **Contractor's** understanding that the time extension is granted only for purposes of permitting continuation of **Contract** performance and payment for **Work** performed and that the **City** retains its right to conduct an investigation and assess liquidated damages as appropriate in the future.

13.9 Analysis and Approval of Time Extensions:

13.9.1 For time extensions for partial payments, a written determination shall be made by the **ACCO** who may, for good and sufficient cause, extend the time for the performance of the **Contract** as follows:

13.9.1(a) If the **Work** is to be completed within six (6) months, the time for performance may be extended for sixty (60) **Days**;

13.9.1(b) If the **Work** is to be completed within less than one (1) year but more than six (6) months, an extension of ninety (90) **Days** may be granted;

13.9.1(c) If the **Contract** period exceeds one (1) year, besides the extension granted in Article 13.9.1(b), an additional thirty (30) **Days** may be granted for each multiple of six (6) months involved beyond the one (1) year period; or

13.9.1(d) If exceptional circumstances exist, the **ACCO** may extend the time for performance beyond the extensions in Articles 13.9.1(a), 13.9.1(b), and 13.9.1(c). In that event, the **ACCO** shall file with the Mayor's Office of Contract Services a written explanation of the exceptional circumstances.

13.9.2 For extensions of time for **Substantial Completion** and final completion payments, the **Engineer**, in consultation with the **ACCO**, shall prepare a written analysis of the delay (including a preliminary determination of the causes of delay, the beginning and end dates for each such cause of delay, and whether the delays are excusable under the terms of this **Contract**). The report shall be subject to review by and approval of the Board, which shall have authority to question its analysis and determinations and request additional facts or documentation. The report as reviewed and made final by the Board shall be made a part of the **Agency** contract file. Neither the report itself nor anything contained therein shall operate as a waiver or release of any claim the **City** may have against the **Contractor** for either actual or liquidated damages.

13.9.3 Approval Mechanism for Time Extensions for **Substantial Completion** or Final Completion Payments: An extension shall be granted only with the approval of the Board which is comprised of the **ACCO** of the **Agency**, the **City** Corporation Counsel, and the **Comptroller**, or their authorized representatives.

13.9.4 Neither the granting of any application for an extension of time to the **Contractor** or any **Other Contractor** on this **Project** nor the papers, records or reports related to any application for or grant of an extension of time or determination related thereto shall be referred to or offered in evidence by the **Contractor** or its attorneys in any action or proceeding.

13.10 No Damage for Delay: The **Contractor** agrees to make no claim for damages for delay in the performance of this **Contract** occasioned by any act or omission to act of the **City** or any of its representatives, except as provided for in Article 11.

ARTICLE 14. COMPLETION AND FINAL ACCEPTANCE OF THE WORK

14.1 Date for **Substantial Completion**: The **Contractor** shall substantially complete the **Work** within the time fixed in Schedule A of the General Conditions, or within the time to which such **Substantial Completion** may be extended.

14.2 Determining the Date of **Substantial Completion**: The **Work** will be deemed to be substantially complete when the two conditions set forth below have been met.

14.2.1 Inspection: The **Engineer** or **Resident Engineer**, as applicable, has inspected the **Work** and has made a written determination that it is substantially complete.

14.2.2 Approval of **Final Approved Punch List** and Date for **Final Acceptance**: Following inspection of the **Work**, the **Engineer/Resident Engineer** shall furnish the **Contractor** with a final punch list, specifying all items of **Work** to be completed and proposing dates for the completion of each specified item of **Work**. The **Contractor** shall then submit in writing to the **Engineer/Resident Engineer** within ten (10) **Days** of the **Engineer/Resident Engineer** furnishing the final punch list either acceptance of the dates or proposed alternative dates for the completion of each specified item of **Work**. If the **Contractor** neither accepts the dates nor proposes alternative dates within ten (10) **Days**, the schedule proposed by the **Engineer/Resident Engineer** shall be deemed accepted. If the **Contractor** proposes alternative dates, then, within a reasonable time after receipt, the **Engineer/Resident Engineer**, in a written notification to the **Contractor**, shall approve the **Contractor's** completion dates or, if they are unable to agree, the **Engineer/Resident Engineer** shall establish dates for the completion of each item of **Work**. The latest completion date specified shall be the date for **Final Acceptance** of the **Work**.

14.3 Date of **Substantial Completion**. The date of approval of the **Final Approved Punch List**, shall be the date of **Substantial Completion**. The date of approval of the **Final Approved Punch List** shall be either (a) if the **Contractor** approves the final punch list and proposed dates for completion furnished by the **Engineer/Resident Engineer**, the date of the **Contractor**'s approval; or (b) if the **Contractor** neither accepts the dates nor proposes alternative dates, ten (10) **Days** after the **Engineer/Resident Engineer** furnishes the **Contractor** with a final punch list and proposed dates for completion; or (c) if the **Contractor** proposes alternative dates, the date that the **Engineer/Resident Engineer** sends written notification to the **Contractor** either approving the **Contractor**'s proposed alternative dates or establishing dates for the completion for each item of **Work**.

14.4 Determining the Date of **Final Acceptance**: The **Work** will be accepted as final and complete as of the date of the **Engineer**'s/**Resident Engineer**'s inspection if, upon such inspection, the **Engineer/Resident Engineer** finds that all items on the **Final Approved Punch List** are complete and no further **Work** remains to be done. The **Commissioner** will then issue a written determination of **Final Acceptance**.

14.5 Request for Inspection: Inspection of the **Work** by the **Engineer/Resident Engineer** for the purpose of **Substantial Completion** or **Final Acceptance** shall be made within fourteen (14) **Days** after receipt of the **Contractor's** written request therefor.

14.6 Request for Re-inspection: If upon inspection for the purpose of **Substantial Completion** or **Final Acceptance**, the **Engineer/Resident Engineer** determines that there are items of **Work** still to be performed, the **Contractor** shall promptly perform them and then request a re-inspection. If upon re-inspection, the **Engineer/Resident Engineer** determines that the **Work** is substantially complete or finally accepted, the date of such re-inspection shall be the date of **Substantial Completion** or **Final Acceptance**. Re-inspection by the **Engineer/Resident Engineer** shall be made within ten (10) **Days** after receipt of the **Contractor's** written request therefor.

14.7 Initiation of Inspection by the **Engineer/Resident Engineer**: If the **Contractor** does not request inspection or re-inspection of the **Work** for the purpose of **Substantial Completion** or **Final Acceptance**, the **Engineer/Resident Engineer** may initiate such inspection or re-inspection.

ARTICLE 15. LIQUIDATED DAMAGES

15.1 In the event the **Contractor** fails to substantially complete the **Work** within the time fixed for such **Substantial Completion** in Schedule A of the General Conditions, plus authorized time extensions, or if the **Contractor**, in the sole determination of the **Commissioner**, has abandoned the **Work**, the **Contractor** shall pay to the **City** the sum fixed in Schedule A of the General Conditions, for each and every **Day** that the time consumed in substantially completing the **Work** exceeds the time allowed therefor; which said sum, in view of the difficulty of accurately ascertaining the loss which the **City** will suffer by reason of delay in the **Substantial Completion** of the **Work** hereunder, is hereby fixed and agreed as the liquidated damages that the **City** will suffer by reason of such delay, and not as a penalty. This Article 15 shall also apply to the **Contractor** whether or not the **Contractor** is defaulted pursuant to Chapter X of this **Contract**. Neither the failure to assess liquidated damages nor the granting of any time extension shall operate as a waiver or release of any claim the **City** may have against the **Contractor** for either actual or liquidated damages.

15.2 Liquidated damages received hereunder are not intended to be nor shall they be treated as either a partial or full waiver or discharge of the **City's** right to indemnification, or the **Contractor's** obligation to indemnify the **City**, or to any other remedy provided for in this **Contract** or by **Law**.

15.3 The **Commissioner** may deduct and retain out of the monies which may become due hereunder, the amount of any such liquidated damages; and in case the amount which may become due hereunder shall be less than the amount of liquidated damages suffered by the **City**, the **Contractor** shall be liable to pay the difference.

ARTICLE 16. OCCUPATION OR USE PRIOR TO COMPLETION

16.1 Unless otherwise provided for in the **Specifications**, the **Commissioner** may take over, use, occupy or operate any part of the **Work** at any time prior to **Final Acceptance**, upon written notification to the **Contractor**. The **Engineer** or **Resident Engineer**, as applicable, shall inspect the part of the **Work** to be taken over, used, occupied, or operated, and will furnish the **Contractor** with a written statement of the **Work**, if any, which remains to be performed on such part. The **Contractor** shall not object to, nor interfere with, the **Commissioner's** decision to exercise the rights granted by Article 16. In the event the **Commissioner** takes over, uses, occupies, or operates any part of the **Work:**

16.1.1 the **Engineer/Resident Engineer** shall issue a written determination of **Substantial Completion** with respect to such part of the **Work**;

16.1.2 the **Contractor** shall be relieved of its absolute obligation to protect such part of the unfinished **Work** in accordance with Article 7;

16.1.3 the **Contractor's** guarantee on such part of the **Work** shall begin on the date of such use by the **City**; and;

16.1.4 the **Contractor** shall be entitled to a return of so much of the amount retained in accordance with Article 21 as it relates to such part of the **Work**, except so much thereof as may be retained under Articles 24 and 44.

CHAPTER IV: SUBCONTRACTS AND ASSIGNMENTS

ARTICLE 17. SUBCONTRACTS

17.1 The **Contractor** shall not make subcontracts totaling an amount more than the percentage of the total **Contract** price fixed in Schedule A of the General Conditions, without prior written permission from the **Commissioner**. All subcontracts made by the **Contractor** shall be in writing. No **Work** may be performed by a **Subcontractor** prior to the **Contractor** entering into a written subcontract with the **Subcontractor** and complying with the provisions of this Article 17.

17.2 Before making any subcontracts, the **Contractor** shall submit a written statement to the **Commissioner** giving the name and address of the proposed **Subcontractor**; the portion of the **Work** and materials which it is to perform and furnish; the cost of the subcontract; the VENDEX questionnaire if required; the proposed subcontract if requested by the **Commissioner**; and any other information tending to prove that the proposed **Subcontractor** has the necessary facilities, skill, integrity, past experience, and financial resources to perform the **Work** in accordance with the terms and conditions of this **Contract**.

17.3 In addition to the requirements in Article 17.2, **Contractor** is required to list the **Subcontractor** in the web based Subcontractor Reporting System through the City's Payee Information Portal (PIP), available at www.nyc.gov/pip.[1] For each **Subcontractor** listed, **Contractor** is required to provide the following information: maximum contract value, description of **Subcontractor's** Work, start and end date of the subcontract and identification of the **Subcontractor**'s industry. Thereafter, **Contractor** will be required to report in the system the payments made to each **Subcontractor** within 30 days of making the payment. If any of the required information changes throughout the Term of the **Contract**, **Contractor** will be required to revise the information in the system.

Failure of the **Contractor** to list a **Subcontractor** and/or to report **Subcontractor** payments in a timely fashion may result in the **Commissioner** declaring the **Contractor** in default of the **Contract** and will subject **Contractor** to liquidated damages in the amount of $100 per day for each day that the **Contractor** fails to identify a **Subcontractor** along with the required information about the **Subcontractor** and/or fails to report payments to a **Subcontractor**, beyond the time frames set forth herein or in the notice from the **City**. Article 15 shall govern the issue of liquidated damages.

17.4 If an approved **Subcontractor** elects to subcontract any portion of its subcontract, the proposed sub-subcontract shall be submitted in the same manner as directed above.

17.5 The **Commissioner** will notify the **Contractor** in writing whether the proposed **Subcontractor** is approved. If the proposed **Subcontractor** is not approved, the **Contractor** may submit another proposed **Subcontractor** unless the **Contractor** decides to do the **Work**. No **Subcontractor** shall be permitted to enter or perform any work on the **Site** unless approved.

17.6 Before entering into any subcontract hereunder, the **Contractor** shall provide the proposed **Subcontractor** with a complete copy of this document and inform the proposed **Subcontractor** fully and completely of all provisions and requirements of this **Contract** relating either directly or indirectly to the **Work** to be performed and the materials to be furnished under such subcontract, and every such

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

Subcontractor shall expressly stipulate that all labor performed and materials furnished by the **Subcontractor** shall strictly comply with the requirements of this **Contract**.

17.7 Documents given to a prospective **Subcontractor** for the purpose of soliciting the **Subcontractor's** bid shall include either a copy of the bid cover or a separate information sheet setting forth the **Project** name, the **Contract** number (if available), the **Agency** (as noted in Article 2.1.6), and the **Project's** location.

17.8 The **Commissioner's** approval of a **Subcontractor** shall not relieve the **Contractor** of any of its responsibilities, duties, and liabilities hereunder. The **Contractor** shall be solely responsible to the **City** for the acts or defaults of its **Subcontractor** and of such **Subcontractor's** officers, agents, and employees, each of whom shall, for this purpose, be deemed to be the agent or employee of the **Contractor** to the extent of its subcontract.

17.9 If the **Subcontractor** fails to maintain the necessary facilities, skill, integrity, past experience, and financial resources (other than due to the **Contractor's** failure to make payments where required) to perform the **Work** in accordance with the terms and conditions of this **Contract**, the **Contractor** shall promptly notify the **Commissioner** and replace such **Subcontractor** with a newly approved **Subcontractor** in accordance with this Article 17.

17.10 The **Contractor** shall be responsible for ensuring that all **Subcontractors** performing **Work** at the **Site** maintain all insurance required by **Law**.

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

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

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

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

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

17.12 The **Commissioner** may deduct from the amounts certified under this **Contract** to be due to the **Contractor**, the sum or sums due and owing from the **Contractor** to the **Subcontractors** according to the terms of the said subcontracts, and in case of dispute between the **Contractor** and its **Subcontractor**, or **Subcontractors**, as to the amount due and owing, the **Commissioner** may deduct and withhold from the amounts certified under this **Contract** to be due to the **Contractor** such sum or sums as may be claimed by such **Subcontractor**, or **Subcontractors**, in a sworn affidavit, to be due and owing until such time as such claim or claims shall have been finally resolved.

17.13 On contracts where performance bonds and payment bonds are executed, the **Contractor** shall include on each requisition for payment the following data: **Subcontractor's** name, value of the subcontract, total amount previously paid to **Subcontractor** for **Work** previously requisitioned, and the amount, including retainage, to be paid to the **Subcontractor** for **Work** included in the requisition.

17.14 On **Contracts** where performance bonds and payment bonds are not executed, the **Contractor** shall include with each requisition for payment submitted hereunder, a signed statement from each and every **Subcontractor** and/or **Materialman** for whom payment is requested in such requisition. Such signed statement shall be on the letterhead of the **Subcontractor** and/or **Materialman** for whom payment is requested and shall (i) verify that such **Subcontractor** and/or **Materialman** has been paid in full for all **Work** performed and/or material supplied to date, exclusive of any amount retained and any amount included on the current requisition, and (ii) state the total amount of retainage to date, exclusive of any amount retained on the current requisition.

ARTICLE 18. ASSIGNMENTS

18.1 The **Contractor** shall not assign, transfer, convey or otherwise dispose of this **Contract**, or the right to execute it, or the right, title or interest in or to it or any part thereof, or assign, by power of attorney or otherwise any of the monies due or to become due under this **Contract**, unless the previous written consent of the **Commissioner** shall first be obtained thereto, and the giving of any such consent to a particular assignment shall not dispense with the necessity of such consent to any further or other assignments.

18.2 Such assignment, transfer, conveyance or other disposition of this **Contract** shall not be valid until filed in the office of the **Commissioner** and the **Comptroller**, with the written consent of the **Commissioner** endorsed thereon or attached thereto.

18.3 Failure to obtain the previous written consent of the **Commissioner** to such an assignment, transfer, conveyance or other disposition, may result in the revocation and annulment of this **Contract**. The **City** shall thereupon be relieved and discharged from any further liability to the **Contractor**, its assignees, transferees or sublessees, who shall forfeit and lose all monies therefor earned under the **Contract**, except so much as may be required to pay the **Contractor's** employees.

18.4 The provisions of this clause shall not hinder, prevent, or affect an assignment by the **Contractor** for the benefit of its creditors made pursuant to the **Laws** of the State of New York.

18.5 This **Contract** may be assigned by the **City** to any corporation, agency or instrumentality having authority to accept such assignment.

CHAPTER V: CONTRACTOR'S SECURITY AND GUARANTEE

ARTICLE 19. SECURITY DEPOSIT

19.1 If performance and payment bonds are required, the **City** shall retain the bid security to ensure that the successful bidder executes the **Contract** and furnishes the required payment and performance security within ten (10) **Days** after notice of the award of the **Contract**. If the successful bidder fails to execute the **Contract** and furnish the required payment and performance security, the **City** shall retain such bid security as set forth in the Information for Bidders. If the successful bidder executes the

Contract and furnishes the required payment and performance security, the **City** shall return the bid security within a reasonable time after the furnishing of such bonds and execution of the **Contract** by the **City**.

19.2 If performance and payment bonds are not required, the bid security shall be retained by the **City** as security for the **Contractor**'s faithful performance of the **Contract**. If partial payments are provided, the bid security will be returned to the **Contractor** after the sum retained under Article 21 equals the amount of the bid security, subject to other provisions of this **Contract**. If partial payments are not provided, the bid security will be released when final payment is certified by the **City** for payment.

19.3 If the **Contractor** is declared in default under Article 48 prior to the return of the deposit, or if any claim is made such as referred to in Article 23, the amount of such deposit, or so much thereof as the **Comptroller** may deem necessary, may be retained and then applied by the **Comptroller**:

19.3.1 To compensate the **City** for any expense, loss or damage suffered or incurred by reason of or resulting from such default, including the cost of re-letting and liquidated damages; or

19.3.2 To indemnify the **City** against any and all claims.

ARTICLE 20. PAYMENT GUARANTEE

20.1 On **Contracts** where one hundred (100%) percent performance bonds and payment bonds are executed, this Article 20 does not apply.

20.2 In the event the terms of this **Contract** do not require the **Contractor** to provide a payment bond or where the **Contract** does not require a payment bond for one hundred (100%) percent of the **Contract** price, the **City** shall, in accordance with the terms of this Article 20, guarantee payment of all lawful claims for:

20.2.1 Wages and compensation for labor performed and/or services rendered; and

20.2.2 Materials, equipment, and supplies provided, whether incorporated into the **Work** or not, when demands have been filed with the **City** as provided hereinafter by any person, firm, or corporation which furnished labor, material, equipment, supplies, or any combination thereof, in connection with the **Work** performed hereunder (hereinafter referred to as the "beneficiary") at the direction of the **City** or the **Contractor**.

20.3 The provisions of Article 20.2 are subject to the following limitations and conditions:

20.3.1 If the **Contractor** provides a payment bond for a value that is less than one hundred (100%) percent of the value of the **Contract Work**, the payment bond provided by the **Contractor** shall be primary (and non-contributing) to the payment guarantee provided under this Article 20.

20.3.2 The guarantee is made for the benefit of all beneficiaries as defined in Article 20.2 provided that those beneficiaries strictly adhere to the terms and conditions of Article 20.3.4 and 20.3.5.

20.3.3 Nothing in this Article 20 shall prevent a beneficiary providing labor, services or material for the **Work** from suing the **Contractor** for any amounts due and owing the beneficiary by the **Contractor**.

20.3.4 Every person who has furnished labor or material, to the **Contractor** or to a **Subcontractor** of the **Contractor**, in the prosecution of the **Work** and who has not been paid in full therefor before the expiration of a period of ninety (90) **Days** after the date on which the last of the labor was performed or material was furnished by him/her for which the claim is made, shall have the right to sue on this payment guarantee in his/her own name for the amount, or the balance thereof, unpaid at the time of commencement of the action; provided, however, that a person having a direct contractual relationship with a **Subcontractor** of the **Contractor** but no contractual relationship express or implied with the **Contractor** shall not have a right of action upon the guarantee unless he/she shall have given written notice to the **Contractor** within one hundred twenty (120) **Days** from the date on which the last of the labor was performed or the last of the material was furnished, for which his/her claim is made, stating with substantial accuracy the amount claimed and the name of the party to whom the material was furnished or for whom the labor was performed. The notice shall be served by delivering the same personally to the **Contractor** or by mailing the same by registered mail, postage prepaid, in an envelope addressed to the **Contractor** at any place where it maintains an office or conducts its business; provided, however, that where such notice is actually received by the **Contractor** by other means, such notice shall be deemed sufficient.

20.3.5 Except as provided in Labor Law Section 220-g, no action on this payment guarantee shall be commenced after the expiration of the one-year limitations period set forth in Section 137(4)(b) of the State Finance Law.

20.3.6 The **Contractor** shall promptly forward to the **City** any notice or demand received pursuant to Article 20.3.4. The **Contractor** shall inform the **City** of any defenses to the notice or demand and shall forward to the **City** any documents the **City** requests concerning the notice or demand.

20.3.7 All demands made against the **City** by a beneficiary of this payment guarantee shall be presented to the **Engineer** along with all written documentation concerning the demand which the **Engineer** deems reasonably appropriate or necessary, which may include, but shall not be limited to: the subcontract; any invoices presented to the **Contractor** for payment; the notarized statement of the beneficiary that the demand is due and payable, that a request for payment has been made of the **Contractor** and that the demand has not been paid by the **Contractor** within the time allowed for such payment by the subcontract; and copies of any correspondence between the beneficiary and the **Contractor** concerning such demand. The **City** shall notify the **Contractor** that a demand has been made. The **Contractor** shall inform the **City** of any defenses to the demand and shall forward to the **City** any documents the **City** requests concerning the demand.

20.3.8 The **City** shall make payment only if, after considering all defenses presented by the **Contractor**, it determines that the payment is due and owing to the beneficiary making the demand.

20.3.9 No beneficiary shall be entitled to interest from the **City**, or to any other costs, including, but not limited to, attorneys' fees, except to the extent required by State Finance Law Section 137.

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

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

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

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

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

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

20.7 Nothing in this Article 20 shall relieve the **Contractor** of the obligation to pay the claims of all persons with valid and lawful claims against the **Contractor** relating to the **Work**.

20.8 The **Contractor** shall not require any performance, payment or other bonds of any **Subcontractor** if this **Contract** does not require such bonds of the **Contractor**.

20.9 The payment guarantee made pursuant to this Article 20 shall be construed in a manner consistent with Section 137 of the State Finance Law and shall afford to persons furnishing labor or materials to the **Contractor** or its **Subcontractors** in the prosecution of the **Work** under this **Contract** all of the rights and remedies afforded to such persons by such section, including but not limited to, the right to commence an action against the **City** on the payment guarantee provided by this Article 20 within the one-year limitations period set forth in Section 137(4)(b).

ARTICLE 21. RETAINED PERCENTAGE

21.1 If this **Contract** requires one hundred (100%) percent performance and payment security, then as further security for the faithful performance of this **Contract**, the **Commissioner** shall deduct, and

retain until the substantial completion of the **Work**, five (5%) percent of the value of **Work** certified for payment in each partial payment voucher.

21.2 If this **Contract** does not require one hundred (100%) percent performance and payment security and if the price for which this **Contract** was awarded does not exceed one million ($1,000,000) dollars, then as further security for the faithful performance of this **Contract**, the **Commissioner** shall deduct, and retain until the substantial completion of the **Work**, five (5%) percent of the value of **Work** certified for payment in each partial payment voucher.

21.3 If this **Contract** does not require one hundred (100%) percent performance and payment security and if the price for which this **Contract** was awarded exceeds one million ($1,000,000) dollars, then as further security for the faithful performance of this **Contract,** the **Commissioner** shall deduct, and retain until the substantial completion of the **Work**, up to ten (10%) percent of the value of **Work** certified for payment in each partial payment voucher. The percentage to be retained is set forth in Schedule A of the General Conditions.

ARTICLE 22. INSURANCE

22.1 Types of Insurance: The **Contractor** shall procure and maintain the following types of insurance if, and as indicated, in Schedule A of the General Conditions (with the minimum limits and special conditions specified in Schedule A). Such insurance shall be maintained from the date the **Contractor** is required to provide Proof of Insurance pursuant to Article 22.3.1 through the date of completion of all required **Work** (including punch list work as certified in writing by the **Resident Engineer**), except for insurance required pursuant to Article 22.1.4, which may terminate upon **Substantial Completion** of the **Contract**. All insurance shall meet the requirements set forth in this Article 22. Wherever this Article requires that insurance coverage be "at least as broad" as a specified form (including all ISO forms), there is no obligation that the form itself be used, provided that the **Contractor** can demonstrate that the alternative form or endorsement contained in its policy provides coverage at least as broad as the specified form.

22.1.1 Commercial General Liability Insurance: The **Contractor** shall provide Commercial General Liability Insurance covering claims for property damage and/or bodily injury, including death, which may arise from any of the operations under this **Contract**. Coverage under this insurance shall be at least as broad as that provided by the latest edition of Insurance Services Office ("ISO") Form CG 0001. Such insurance shall be "occurrence" based rather than "claims-made" and include, without limitation, the following types of coverage: premises operations; products and completed operations; contractual liability (including the tort liability of another assumed in a contract); broad form property damage; independent contractors; explosion, collapse and underground (XCU); construction means and methods; and incidental malpractice. Such insurance shall contain a "per project" aggregate limit, as specified in Schedule A, that applies separately to operations under this **Contract**.

22.1.1(a) Such Commercial General Liability Insurance shall name the **City** as an Additional Insured. Coverage for the City shall specifically include the **City's** officials and employees, be at least as broad as the latest edition of ISO Form CG 20 10 and provide completed operations coverage at least as broad as the latest edition of ISO Form CG 20 37.

22.1.1(b) Such Commercial General Liability Insurance shall name all other entities designated as additional insureds in Schedule A but only for claims arising from the

Contractor's operations under this **Contract**, with coverage at least as broad as the latest edition of ISO Form CG 20 26.

22.1.1(c) If the **Work** requires a permit from the Department of Buildings pursuant to 1 RCNY Section 101-08, the **Contractor** shall provide Commercial General Liability Insurance with limits of at least those required by 1 RCNY section 101-08 or greater limits required by the Agency in accordance with Schedule A. If the **Work** does not require such a permit, the minimum limits shall be those provided for in Schedule A.

22.1.1(d) If any of the **Work** includes repair of a waterborne vessel owned by or to be delivered to the **City**, such Commercial General Liability shall include, or be endorsed to include, Ship Repairer's Legal Liability Coverage to protect against, without limitation, liability arising from navigation of such vessels prior to delivery to and acceptance by the **City**.

22.1.2 Workers' Compensation Insurance, Employers' Liability Insurance, and Disability Benefits Insurance: The **Contractor** shall provide, and shall cause its **Subcontractors** to provide, Workers Compensation Insurance, Employers' Liability Insurance, and Disability Benefits Insurance in accordance with the **Laws** of the State of New York on behalf of all employees providing services under this **Contract** (except for those employees, if any, for which the **Laws** require insurance only pursuant to Article 22.1.3).

22.1.3 United States Longshoremen's and Harbor Workers Act and/or Jones Act Insurance: If specified in Schedule A of the General Conditions or if required by **Law**, the **Contractor** shall provide insurance in accordance with the United States Longshoremen's and Harbor Workers Act and/or the Jones Act, on behalf of all qualifying employees providing services under this **Contract**.

22.1.4 Builders Risk Insurance: If specified in Schedule A of the General Conditions, the **Contractor** shall provide Builders Risk Insurance on a completed value form for the total value of the **Work** through **Substantial Completion** of the **Work** in its entirety. Such insurance shall be provided on an All Risk basis and include coverage, without limitation, for windstorm (including named windstorm), storm surge, flood and earth movement. Unless waived by the **Commissioner**, it shall include coverage for ordinance and law, demolition and increased costs of construction, debris removal, pollutant clean up and removal, and expediting costs. Such insurance shall cover, without limitation, (a) all buildings and/or structures involved in the **Work**, as well as temporary structures at the **Site**, and (b) any property that is intended to become a permanent part of such building or structure, whether such property is on the **Site**, in transit or in temporary storage. Policies shall name the **Contractor** as Named Insured and list the **City** as both an Additional Insured and a Loss Payee as its interest may appear.

22.1.4(a) Policies of such insurance shall specify that, in the event a loss occurs at an occupied facility, occupancy of such facility is permitted without the consent of the issuing insurance company.

22.1.4(b) Such insurance may be provided through an Installation Floater, at the **Contractor's** option, if it otherwise conforms with the requirements of this Article 22.1.4.

22.1.5 Commercial Automobile Liability Insurance: The **Contractor** shall provide Commercial Automobile Liability Insurance for liability arising out of ownership,

maintenance or use of any owned (if any), non-owned and hired vehicles to be used in connection with this **Contract**. Coverage shall be at least as broad as the latest edition of ISO Form CA0001. If vehicles are used for transporting hazardous materials, the Automobile Liability Insurance shall be endorsed to provide pollution liability broadened coverage for covered vehicles (endorsement CA 99 48) as well as proof of MCS 90.

22.1.6 Contractors Pollution Liability Insurance: If specified in Schedule A of the General Conditions, the **Contractor** shall maintain, or cause the **Subcontractor** doing such **Work** to maintain, Contractors Pollution Liability Insurance covering bodily injury and property damage. Such insurance shall provide coverage for actual, alleged or threatened emission, discharge, dispersal, seepage, release or escape of pollutants (including asbestos), including any loss, cost or expense incurred as a result of any cleanup of pollutants (including asbestos) or in the investigation, settlement or defense of any claim, action, or proceedings arising from the operations under this **Contract**. Such insurance shall be in the **Contractor's** name and list the **City** as an Additional Insured and any other entity specified in Schedule A. Coverage shall include, without limitation, (a) loss of use of damaged property or of property that has not been physically injured, (b) transportation, and (c) non-owned disposal sites.

22.1.6(a) Coverage for the **City** as Additional Insured shall specifically include the **City's** officials and employees and be at least as broad as provided to the **Contractor** for this **Project**.

22.1.6(b) If such insurance is written on a claims-made policy, such policy shall have a retroactive date on or before the effective date of this **Contract**, and continuous coverage shall be maintained, or an extended discovery period exercised, for a period of not less than three (3) years from the time the **Work** under this **Contract** is completed.

22.1.7 Marine Insurance:

22.1.7(a) Marine Protection and Indemnity Insurance: If specified in Schedule A of the General Conditions or if the **Contractor** engages in marine operations in the execution of any part of the **Work**, the **Contractor** shall maintain, or cause the **Subcontractor** doing such Work to maintain, Marine Protection and Indemnity Insurance with coverage at least as broad as Form SP-23. The insurance shall provide coverage for the **Contractor** or **Subcontractor** (whichever is doing this **Work**) and for the **City** (together with its officials and employees) and any other entity specified in Schedule A as an Additional Insured for bodily injury and property damage arising from marine operations under this **Contract**. Coverage shall include, without limitation, injury or death of crew members (if not fully provided through other insurance), removal of wreck, damage to piers, wharves and other fixed or floating objects and loss of or damage to any other vessel or craft, or to property on such other vessel or craft.

22.1.7(b) Hull and Machinery Insurance: If specified in Schedule A of the General Conditions or if the **Contractor** engages in marine operations in the execution of any part of the **Work**, the **Contractor** shall maintain, or cause the **Subcontractor** doing such **Work** to maintain, Hull and Machinery Insurance with coverage for the **Contractor** or **Subcontractor** (whichever is doing this Work) and for the **City** (together with its officials and employees) as Additional Insured at least as broad as the latest edition of American Institute Tug Form for all tugs used under this

Contract and Collision Liability at least as broad as the latest edition of American Institute Hull Clauses.

22.1.7(c) Marine Pollution Liability Insurance: If specified in Schedule A of the General Conditions or if the **Contractor** engages in marine operations in the execution of any part of the **Work**, the **Contractor** shall maintain, or cause the **Subcontractor** doing such Work to maintain, Marine Pollution Liability Insurance covering itself (or the Subcontractor doing such Work) as Named Insured and the **City** (together with its officials and employees) and any other entity specified in Schedule A as an Additional Insured. Coverage shall be at least as broad as that provided by the latest edition of Water Quality Insurance Syndicate Form and include, without limitation, liability arising from the discharge or substantial threat of a discharge of oil, or from the release or threatened release of a hazardous substance including injury to, or economic losses resulting from, the destruction of or damage to real property, personal property or natural resources.

22.1.8 The **Contractor** shall provide such other types of insurance, at such minimum limits and with such conditions, as are specified in Schedule A of the General Conditions.

22.2 General Requirements for Insurance Coverage and Policies:

22.2.1 All required insurance policies shall be maintained with companies that may lawfully issue the required policy and have an A.M. Best rating of at least A-/VII or a Standard and Poor's rating of at least A, unless prior written approval is obtained from the **City** Corporation Counsel.

22.2.2 The **Contractor** shall be solely responsible for the payment of all premiums for all required policies and all deductibles and self-insured retentions to which such policies are subject, whether or not the **City** is an insured under the policy.

22.2.3 In his/her sole discretion, the **Commissioner** may, subject to the approval of the **Comptroller** and the **City** Corporation Counsel, accept Letters of Credit and/or custodial accounts in lieu of required insurance.

22.2.4 The **City's** limits of coverage for all types of insurance required pursuant to Schedule A of the General Conditions shall be the greater of (i) the minimum limits set forth in Schedule A or (ii) the limits provided to the **Contractor** as Named Insured under all primary, excess, and umbrella policies of that type of coverage.

22.2.5 The **Contractor** may satisfy its insurance obligations under this Article 22 through primary policies or a combination of primary and excess/umbrella policies, so long as all policies provide the scope of coverage required herein.

22.2.6 Policies of insurance provided pursuant to this Article 22 shall be primary and non-contributing to any insurance or self-insurance maintained by the **City**.

22.3 Proof of Insurance:

22.3.1 For all types of insurance required by Article 22.1 and Schedule A, except for insurance required by Articles 22.1.4 and 22.1.7, the **Contractor** shall file proof of insurance in accordance with this Article 22.3 within ten (10) **Days** of award. For insurance

provided pursuant to Articles 22.1.4 and 22.1.7, proof shall be filed by a date specified by the **Commissioner** or ten (10) **Days** prior to the commencement of the portion of the **Work** covered by such policy, whichever is earlier.

22.3.2 For Workers' Compensation Insurance provided pursuant to Article 22.1.2, the **Contractor** shall submit one of the following forms: C-105.2 Certificate of Workers' Compensation Insurance; U-26.3 - State Insurance Fund Certificate of Workers' Compensation Insurance; Request for WC/DB Exemption (Form CE-200); equivalent or successor forms used by the New York State Workers' Compensation Board; or other proof of insurance in a form acceptable to the **Commissioner**. For Disability Benefits Insurance provided pursuant to Article 22.1.2, the Contractor shall submit DB-120.1 - Certificate Of Insurance Coverage Under The NYS Disability Benefits Law, Request for WC/DB Exemption (Form CE-200); equivalent or successor forms used by the New York State Workers' Compensation Board; or other proof of insurance in a form acceptable to the **Commissioner**. ACORD forms are not acceptable.

22.3.3 For policies provided pursuant to all of Article 22.1 other than Article 22.1.2, the **Contractor** shall submit one or more Certificates of Insurance on forms acceptable to the **Commissioner**. All such Certificates of Insurance shall certify (a) the issuance and effectiveness of such policies of insurance, each with the specified minimum limits (b) for insurance secured pursuant to Article 22.1.1 that the **City** and any other entity specified in Schedule A is an Additional Insured thereunder; (c) in the event insurance is required pursuant to Article 22.1.6 and/or Article 22.1.7, that the City is an Additional Insured thereunder; (d) the company code issued to the insurance company by the National Association of Insurance Commissioners (the NAIC number); and (e) the number assigned to the **Contract** by the **City**. All such Certificates of Insurance shall be accompanied by either a duly executed "Certification by Insurance Broker or Agent" in the form contained in Part III of Schedule A or copies of all policies referenced in such Certificate of Insurance as certified by an authorized representative of the issuing insurance carrier. If any policy is not available at the time of submission, certified binders may be submitted until such time as the policy is available, at which time a certified copy of the policy shall be submitted.

22.3.4 Documentation confirming renewals of insurance shall be submitted to the **Commissione**r prior to the expiration date of coverage of policies required under this **Contract**. Such proofs of insurance shall comply with the requirements of Articles 22.3.2 and 22.3.3.

22.3.5 The **Contractor** shall be obligated to provide the **City** with a copy of any policy of insurance provided pursuant to this Article 22 upon the demand for such policy by the **Commissioner** or the **City** Corporation Counsel.

22.4 Operations of the **Contractor**:

22.4.1 The **Contractor** shall not commence the **Work** unless and until all required certificates have been submitted to and accepted by the **Commissioner**. Acceptance by the **Commissioner** of a certificate does not excuse the **Contractor** from securing insurance consistent with all provisions of this Article 22 or of any liability arising from its failure to do so.

22.4.2 The **Contractor** shall be responsible for providing continuous insurance coverage in the manner, form, and limits required by this **Contract** and shall be authorized to perform **Work** only during the effective period of all required coverage.

22.4.3 In the event that any of the required insurance policies lapse, are revoked, suspended or otherwise terminated, for whatever cause, the **Contractor** shall immediately stop all **Work**, and shall not recommence **Work** until authorized in writing to do so by the **Commissioner**. Upon quitting the **Site**, except as otherwise directed by the **Commissioner**, the **Contractor** shall leave all plant, materials, equipment, tools, and supplies on the **Site**. **Contract** time shall continue to run during such periods and no extensions of time will be granted. The **Commissioner** may also declare the **Contractor** in default for failure to maintain required insurance.

22.4.4 In the event the **Contractor** receives notice, from an insurance company or other person, that any insurance policy required under this Article 22 shall be cancelled or terminated (or has been cancelled or terminated) for any reason, the **Contractor** shall immediately forward a copy of such notice to both the **Commissioner** and the New York City Comptroller, attn: Office of Contract Administration, Municipal Building, One Centre Street, room 1005, New York, New York 10007. Notwithstanding the foregoing, the **Contractor** shall ensure that there is no interruption in any of the insurance coverage required under this Article 22.

22.4.5 Where notice of loss, damage, occurrence, accident, claim or suit is required under an insurance policy maintained in accordance with this Article 22, the **Contractor** shall notify in writing all insurance carriers that issued potentially responsive policies of any such event relating to any operations under this **Contract** (including notice to Commercial General Liability insurance carriers for events relating to the **Contractor**'s own employees) no later than 20 days after such event. For any policy where the **City** is an Additional Insured, such notice shall expressly specify that "this notice is being given on behalf of the City of New York as Insured as well as the Named Insured." Such notice shall also contain the following information: the number of the insurance policy, the name of the named insured, the date and location of the damage, occurrence, or accident, and the identity of the persons or things injured, damaged or lost. The **Contractor** shall simultaneously send a copy of such notice to the City of New York c/o Insurance Claims Specialist, Affirmative Litigation Division, New York City Law Department, 100 Church Street, New York, New York 10007.

22.4.6 In the event of any loss, accident, claim, action, or other event that does or can give rise to a claim under any insurance policy required under this Article 22, the **Contractor** shall at all times fully cooperate with the **City** with regard to such potential or actual claim.

22.5 **Subcontractor** Insurance: In the event the **Contractor** requires any **Subcontractor** to procure insurance with regard to any operations under this **Contract** and requires such **Subcontractor** to name the **Contractor** as an **Additional Insured** thereunder, the **Contractor** shall ensure that the **Subcontractor** name the **City**, including its officials and employees, as an Additional Insured with coverage at least as broad as the most recent edition of ISO Form CG 20 26.

22.6 Wherever reference is made in Article 7 or this Article 22 to documents to be sent to the **Commissioner** (e.g., notices, filings, or submissions), such documents shall be sent to the address set forth in Schedule A of the General Conditions. In the event no address is set forth in Schedule A, such documents are to be sent to the **Commissioner's** address as provided elsewhere in this **Contract**.

22.7 Apart from damages or losses covered by insurance provided pursuant to Articles 22.1.2, 22.1.3, or 22.1.5, the **Contractor** waives all rights against the **City**, including its officials and employees, for any damages or losses that are covered under any insurance required under this Article 22 (whether or

not such insurance is actually procured or claims are paid thereunder) or any other insurance applicable to the operations of the **Contractor** and/or its employees, agents, or **Subcontractors**.

22.8 In the event the **Contractor** utilizes a self-insurance program to satisfy any of the requirements of this Article 22, the **Contractor** shall ensure that any such self-insurance program provides the **City** with all rights that would be provided by traditional insurance under this Article 22, including but not limited to the defense and indemnification obligations that insurers are required to undertake in liability policies.

22.9 Materiality/Non-Waiver: The **Contractor's** failure to secure policies in complete conformity with this Article 22, or to give an insurance company timely notice of any sort required in this **Contract** or to do anything else required by this Article 22 shall constitute a material breach of this **Contract**. Such breach shall not be waived or otherwise excused by any action or inaction by the **City** at any time.

22.10 Pursuant to General Municipal Law Section 108, this **Contract** shall be void and of no effect unless **Contractor** maintains Workers' Compensation Insurance for the term of this **Contract** to the extent required and in compliance with the New York State Workers' Compensation Law.

22.11 Other Remedies: Insurance coverage provided pursuant to this Article 22 or otherwise shall not relieve the **Contractor** of any liability under this **Contract**, nor shall it preclude the **City** from exercising any rights or taking such other actions available to it under any other provisions of this **Contract** or **Law**.

ARTICLE 23. MONEY RETAINED AGAINST CLAIMS

23.1 If any claim shall be made by any person or entity (including **Other Contractors** with the **City** on this **Project**) against the **City** or against the **Contractor** and the **City** for any of the following:

(a) An alleged loss, damage, injury, theft or vandalism of any of the kinds referred to in Articles 7 and 12, plus the reasonable costs of defending the **City**, which in the opinion of the **Comptroller** may not be paid by an insurance company (for any reason whatsoever); or

(b) An infringement of copyrights, patents or use of patented articles, tools, etc., as referred to in Article 57; or

(c) Damage claimed to have been caused directly or indirectly by the failure of the **Contractor** to perform the **Work** in strict accordance with this **Contract,**

the amount of such claim, or so much thereof as the **Comptroller** may deem necessary, may be withheld by the **Comptroller**, as security against such claim, from any money due hereunder. The **Comptroller**, in his/her discretion, may permit the **Contractor** to substitute other satisfactory security in lieu of the monies so withheld.

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

ARTICLE 24. MAINTENANCE AND GUARANTY

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

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

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

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

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

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

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

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

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

CHAPTER VI: CHANGES, EXTRA WORK, AND DOCUMENTATION OF CLAIM

ARTICLE 25. CHANGES

25.1 Changes may be made to this **Contract** only as duly authorized in writing by the **Commissioner** in accordance with the **Law** and this **Contract**. All such changes, modifications, and amendments will become a part of the **Contract**. **Work** so ordered shall be performed by the **Contractor**.

25.2 **Contract** changes will be made only for **Work** necessary to complete the **Work** included in the original scope of the **Contract** and/or for non-material changes to the scope of the **Contract**. Changes are not permitted for any material alteration in the scope of **Work** in the **Contract**.

25.3 The **Contractor** shall be entitled to a price adjustment for **Extra Work** performed pursuant to a written change order. Adjustments to price shall be computed in one or more of the following ways:

25.3.1 By applicable unit prices specified in the **Contract**; and/or

25.3.2 By agreement of a fixed price; and/or

25.3.3 By time and material records; and/or

25.3.4 In any other manner approved by the **CCPO**.

25.4 All payments for change orders are subject to pre-audit by the **Engineering Audit Officer** and may be post-audited by the **Comptroller** and/or the **Agency**.

ARTICLE 26. METHODS OF PAYMENT FOR OVERRUNS AND EXTRA WORK

26.1 Overrun of Unit Price Item: An overrun is any quantity of a unit price item which the **Contractor** is directed to provide which is in excess of one hundred twenty-five (125%) percent of the estimated quantity for that item set forth in the bid schedule.

26.1.1For any unit price item, the **Contractor** will be paid at the unit price bid for any quantity up to one hundred twenty-five (125%) percent of the estimated quantity for that item set forth in the bid schedule. If during the progress of the **Work**, the actual quantity of any unit price item required to complete the **Work** approaches the estimated quantity for that item, and for any reason it appears that the actual quantity of any unit price item necessary to complete the **Work** will exceed the estimated quantity for that item by twenty-five (25%) percent, the **Contractor** shall immediately notify the **Engineer** of such anticipated overrun. The **Contractor** shall not be compensated for any quantity of a unit price item provided which is in excess of one hundred twenty-five (125%) percent of the estimated quantity for that item set forth in the bid schedule without written authorization from the **Engineer**.

26.1.2 If the actual quantity of any unit price item necessary to complete the **Work** will exceed one hundred twenty five (125%) percent of the estimated quantity for that item set forth in the bid schedule, the **City** reserves the right and the **Contractor** agrees to negotiate a new unit price for such item. In no event shall such negotiated new unit price exceed the unit bid price. If the **City** and **Contractor** cannot agree on a new unit price, then the **City** shall order the **Contractor** and the **Contractor** agrees to provide additional quantities of

the item on the basis of time and material records for the actual and reasonable cost as determined under Article 26.2, but in no event at a unit price exceeding the unit price bid.

26.2 **Extra Work:** For **Extra Work** where payment is by agreement on a fixed price in accordance with Article 25.3.2, the price to be paid for such **Extra Work** shall be based on the fair and reasonable estimated cost of the items set forth below. For **Extra Work** where payment is based on time and material records in accordance with Article 25.3.3, the price to be paid for such **Extra Work** shall be the actual and reasonable cost of the items set forth below, calculated in accordance with the formula specified therein, if any.

26.2.1 Necessary materials (including transportation to the **Site**); plus

26.2.2 Necessary direct labor, including payroll taxes (subject to statutory wage caps) and supplemental benefits; plus

26.2.3 Sales and personal property taxes, if any, required to be paid on materials not incorporated into such **Extra Work**; plus

26.2.4 Reasonable rental value of **Contractor**-owned (or **Subcontractor**-owned, as applicable), necessary plant and equipment other than **Small Tools**, plus fuel/energy costs. Except for fuel costs for pick-up trucks which shall be reimbursed based on a consumption of five (5) gallons per shift, fuel costs shall be reimbursed based on actual costs or, in the absence of auditable documentation, the following fuel consumption formula per operating hour: (.035) 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 non-operating **Contractor**-owned (or **Subcontractor**-owned, as applicable) equipment (scaffolding, sheeting systems, road plates, etc.), the **City** may restrict reimbursement to a purchase-salvage/life cycle basis if less than the computed rental costs; plus

26.2.5 Necessary installation and dismantling of such plant and equipment, including transportation to and from the **Site**, if any, provided that, in the case of non-**Contractor**-owned (or non-**Subcontractor**-owned, as applicable) equipment rented from a third party, the cost of installation and dismantling are not allowable if such costs are included in the rental rate; plus

26.2.6 Necessary fees charged by governmental entities; plus

26.2.7 Necessary construction-related service fees charged by non-governmental entities, such as landfill tipping fees; plus

26.2.8 Reasonable rental costs of non-**Contractor**-owned (or non-**Subcontractor**-owned, as applicable) necessary plant and equipment other than **Small Tools**, plus fuel/energy costs. Except for fuel costs for pick-up trucks which shall be reimbursed based on a consumption of five (5) gallons per shift, fuel costs shall be reimbursed based on actual costs or, in the absence of auditable documentation, the following fuel consumption formula per hour of operation: (.035) 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 by a **Subcontractor**, the **Contractor** shall not be entitled to receive more than an additional allowance of five (5%) percent for overhead and profit over the cost of such **Subcontractor's Work** as computed in accordance with Article 26.2.

ARTICLE 27. RESOLUTION OF DISPUTES

27.1 All disputes between the **City** and the **Contractor** of the kind delineated in this Article 27.1 that arise under, or by virtue of, this **Contract** shall be finally resolved in accordance with the provisions of this Article 27 and the **PPB** Rules. This procedure for resolving all disputes of the kind delineated herein shall be the exclusive means of resolving any such disputes.

27.1.1 This Article 27 shall not apply to disputes concerning matters dealt with in other sections of the **PPB** Rules, or to disputes involving patents, copyrights, trademarks, or trade secrets (as interpreted by the courts of New York State) relating to proprietary rights in computer software.

27.1.2 This Article 27 shall apply only to disputes about the scope of **Work** delineated by the **Contract**, the interpretation of **Contract** documents, the amount to be paid for **Extra Work** or disputed work performed in connection with the **Contract**, the conformity of the **Contractor's Work** to the **Contract**, and the acceptability and quality of the **Contractor's Work**; such disputes arise when the **Engineer**, **Resident Engineer**, **Engineering Audit Officer**, or other designee of the **Commissioner** makes a determination with which the **Contractor** disagrees.

27.2 All determinations required by this Article 27 shall be made in writing clearly stated, with a reasoned explanation for the determination based on the information and evidence presented to the party making the determination. Failure to make such determination within the time required by this Article 27 shall be deemed a non-determination without prejudice that will allow application to the next level.

27.3 During such time as any dispute is being presented, heard, and considered pursuant to this Article 27, the **Contract** terms shall remain in force and the **Contractor** shall continue to perform **Work** as directed by the **ACCO** or the **Engineer**. Failure of the **Contractor** to continue **Work** as directed shall constitute a waiver by the **Contractor** of its claim.

27.4 Presentation of Disputes to **Commissioner**.

Notice of Dispute and Agency Response. The **Contractor** shall present its dispute in writing ("Notice of Dispute") to the **Commissioner** within thirty (30) Days of receiving written notice of the determination or action that is the subject of the dispute. This notice requirement shall not be read to replace any other notice requirements contained in the **Contract**. The Notice of Dispute shall include all the facts, evidence, documents, or other basis upon which the **Contractor** relies in support of its position, as well as a detailed computation demonstrating how any amount of money claimed by the **Contractor** in the dispute was arrived at. Within thirty (30) Days after receipt of the detailed written submission comprising the complete Notice of Dispute, the **Engineer**, **Resident Engineer**, **Engineering Audit Officer**, or other designee of the **Commissioner** shall submit to the **Commissioner** all materials he or she deems pertinent to the dispute. Following initial submissions to the **Commissioner**, either party may demand of the other the production of any document or other material the demanding party believes may be relevant to the dispute. The requested party shall produce all relevant materials that are not otherwise

protected by a legal privilege recognized by the courts of New York State. Any question of relevancy shall be determined by the **Commissioner** whose decision shall be final. Willful failure of the **Contractor** to produce any requested material whose relevancy the **Contractor** has not disputed, or whose relevancy has been affirmatively determined, shall constitute a waiver by the **Contractor** of its claim.

27.4.1 **Commissioner** Inquiry. The **Commissioner** shall examine the material and may, in his or her discretion, convene an informal conference with the **Contractor**, the **ACCO**, and the **Engineer**, **Resident Engineer**, **Engineering Audit Officer**, or other designee of the **Commissioner** to resolve the issue by mutual consent prior to reaching a determination. The **Commissioner** may seek such technical or other expertise as he or she shall deem appropriate, including the use of neutral mediators, and require any such additional material from either or both parties as he or she deems fit. The **Commissioner's** ability to render, and the effect of, a decision hereunder shall not be impaired by any negotiations in connection with the dispute presented, whether or not the **Commissioner** participated therein. The **Commissioner** may or, at the request of any party to the dispute, shall compel the participation of any **Other Contractor** with a contract related to the **Work** of this **Contract**, and that **Contractor** shall be bound by the decision of the **Commissioner**. Any **Other Contractor** thus brought into the dispute resolution proceeding shall have the same rights and obligations under this Article 27 as the **Contractor** initiating the dispute.

27.4.2 **Commissioner** Determination. Within thirty (30) **Days** after the receipt of all materials and information, or such longer time as may be agreed to by the parties, the **Commissioner** shall make his or her determination and shall deliver or send a copy of such determination to the **Contractor**, the **ACCO,** and **Engineer**, **Resident Engineer**, **Engineering Audit Officer**, or other designee of the **Commissioner**, as applicable, together with a statement concerning how the decision may be appealed.

27.4.3 Finality of **Commissioner's** Decision. The **Commissioner's** decision shall be final and binding on all parties, unless presented to the Contract Dispute Resolution Board pursuant to this Article 27. The **City** may not take a petition to the Contract Dispute Resolution Board. However, should the **Contractor** take such a petition, the **City** may seek, and the Contract Dispute Resolution Board may render, a determination less favorable to the **Contractor** and more favorable to the **City** than the decision of the **Commissioner**.

27.5 Presentation of Dispute to the **Comptroller**. Before any dispute may be brought by the **Contractor** to the Contract Dispute Resolution Board, the **Contractor** must first present its claim to the **Comptroller** for his or her review, investigation, and possible adjustment.

27.5.1 Time, Form, and Content of Notice. Within thirty (30) **Days** of its receipt of a decision by the **Commissioner,** the **Contractor** shall submit to the **Comptroller** and to the **Commissioner** a Notice of Claim regarding its dispute with the **Agency**. The Notice of Claim shall consist of (i) a brief written statement of the substance of the dispute, the amount of money, if any, claimed and the reason(s) the **Contractor** contends the dispute was wrongly decided by the **Commissioner**; (ii) a copy of the written decision of the **Commissioner**; and (iii) a copy of all materials submitted by the **Contractor** to the **Agency**, including the Notice of Dispute. The **Contractor** may not present to the **Comptroller** any material not presented to the **Commissioner**, except at the request of the **Comptroller**.

27.5.2 Response. Within thirty (30) **Days** of receipt of the Notice of Claim, the **Agency** shall make available to the **Comptroller** a copy of all material submitted by the **Agency** to the **Commissioner** in connection with the dispute. The **Agency** may not present to the **Comptroller** any material not presented to the **Commissioner** except at the request of the **Comptroller**.

27.5.3 **Comptroller** Investigation. The **Comptroller** may investigate the claim in dispute and, in the course of such investigation, may exercise all powers provided in Sections 7-201 and 7-203 of the Administrative Code. In addition, the **Comptroller** may demand of either party, and such party shall provide, whatever additional material the **Comptroller** deems pertinent to the claim, including original business records of the **Contractor**. Willful failure of the **Contractor** to produce within fifteen (15) **Days** any material requested by the **Comptroller** shall constitute a waiver by the **Contractor** of its claim. The **Comptroller** may also schedule an informal conference to be attended by the **Contractor**, **Agency** representatives, and any other personnel desired by the **Comptroller**.

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

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

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

27.6.2 The **CCPO** or his/her designee; any designee shall have the requisite background to consider and resolve the merits of the dispute and shall not have participated personally and substantially in the particular matter that is the subject of the dispute or report to anyone who so participated; and

27.6.3 A person with appropriate expertise who is not an employee of the **City**. This person shall be selected by the presiding administrative law judge from a prequalified panel of individuals, established and administered by OATH with appropriate background to act as decision-makers in a dispute. Such individual may not have a contract or dispute with the **City** or be an officer or employee of any company or organization that does, or regularly represents persons, companies, or organizations having disputes with the **City**.

27.7 Petition to the Contract Dispute Resolution Board. In the event the claim has not been settled or adjusted by the **Comptroller** within the period provided in this Article 27, the **Contractor**,

within thirty (30) **Days** thereafter, may petition the Contract Dispute Resolution Board to review the **Commissioner's** determination.

27.7.1 Form and Content of Petition by **Contractor**. The **Contractor** shall present its dispute to the Contract Dispute Resolution Board in the form of a petition, which shall include (i) a brief written statement of the substance of the dispute, the amount of money, if any, claimed, and the reason(s) the **Contractor** contends the dispute was wrongly decided by the **Commissioner**; (ii) a copy of the written Decision of the **Commissioner,** (iii) copies of all materials submitted by the **Contractor** to the Agency; (iv) a copy of the written decision of the **Comptroller**, if any, and (v) copies of all correspondence with, or written material submitted by the **Contractor**, to the **Comptroller**. The **Contractor** shall concurrently submit four (4) complete sets of the Petition: one set to the **City** Corporation Counsel (Attn: Commercial and Real Estate Litigation Division) and three (3) sets to the Contract Dispute Resolution Board at OATH's offices with proof of service on the **City** Corporation Counsel. In addition, the **Contractor** shall submit a copy of the written statement of the substance of the dispute, cited in (i) above, to both the **Commissioner** and the **Comptroller**.

27.7.2 **Agency** Response. Within thirty (30) **Days** of its receipt of the Petition by the **City** Corporation Counsel, the **Agency** shall respond to the brief written statement of the **Contractor** and make available to the Contract Dispute Resolution Board all material it submitted to the **Commissioner** and **Comptroller**. Three (3) complete copies of the **Agency** response shall be provided to the Contract Dispute Resolution Board and one to the **Contractor**. Extensions of time for submittal of the **Agency** response shall be given as necessary upon a showing of good cause or, upon consent of the parties, for an initial period of up to thirty (30) Days.

27.7.3 Further Proceedings. The Contract Dispute Resolution Board shall permit the **Contractor** to present its case by submission of memoranda, briefs, and oral argument. The Contract Dispute Resolution Board shall also permit the **Agency** to present its case in response to the **Contractor** by submission of memoranda, briefs, and oral argument. If requested by the **City** Corporation Counsel, the **Comptroller** shall provide reasonable assistance in the preparation of the **Agency's** case. Neither the **Contractor** nor the **Agency** may support its case with any documentation or other material that was not considered by the **Comptroller**, unless requested by the Contract Dispute Resolution Board. The Contract Dispute Resolution Board, in its discretion, may seek such technical or other expert advice as it shall deem appropriate and may seek, on its own or upon application of a party, any such additional material from any party as it deems fit. The Contract Dispute Resolution Board, in its discretion, may combine more than one dispute between the parties for concurrent resolution.

27.7.4 Contract Dispute Resolution Board Determination. Within forty-five (45) **Days** of the conclusion of all written submissions and oral arguments, the Contract Dispute Resolution Board shall render a written decision resolving the dispute. In an unusually complex case, the Contract Dispute Resolution Board may render its decision in a longer period, not to exceed ninety (90) **Days**, and shall so advise the parties at the commencement of this period. The Contract Dispute Resolution Board's decision must be consistent with the terms of the **Contract**. Decisions of the Contract Dispute Resolution Board shall only resolve matters before the Contract Dispute Resolution Board and shall not have precedential effect with respect to matters not before the Contract Dispute Resolution Board.

27.7.5 Notification of Contract Dispute Resolution Board Decision. The Contract Dispute Resolution Board shall send a copy of its decision to the **Contractor**, the **ACCO**, the Engineer, the **Comptroller**, the **City** Corporation Counsel, the CCPO, and the **PPB**. A decision in favor of the **Contractor** shall be subject to the prompt payment provisions of the **PPB** Rules. The Required Payment Date shall be thirty (30) Days after the date the parties are formally notified of the Contract Dispute Resolution Board's decision.

27.7.6 Finality of Contract Dispute Resolution Board Decision. The Contract Dispute Resolution Board's decision shall be final and binding on all parties. Any party may seek review of the Contract Dispute Resolution Board's decision solely in the form of a challenge, filed within four (4) months of the date of the Contract Dispute Resolution Board's decision, in a court of competent jurisdiction of the State of New York, County of New York pursuant to Article 78 of the Civil Practice Law and Rules. Such review by the court shall be limited to the question of whether or not the Contract Dispute Resolution Board's decision was made in violation of lawful procedure, was affected by an error of **Law**, or was arbitrary and capricious or an abuse of discretion. No evidence or information shall be introduced or relied upon in such proceeding that was not presented to the Contract Dispute Resolution Board in accordance with this Article 27.

27.8 Any termination, cancellation, or alleged breach of the **Contract** prior to or during the pendency of any proceedings pursuant to this Article 27 shall not affect or impair the ability of the **Commissioner** or Contract Dispute Resolution Board to make a binding and final decision pursuant to this Article 27.

ARTICLE 28. RECORD KEEPING FOR EXTRA OR DISPUTED WORK OR WORK ON A TIME & MATERIALS BASIS

28.1 While the **Contractor** or any of its **Subcontractors** is performing **Work** on a time and material basis or **Extra Work** on a time and material basis ordered by the **Commissioner** under Article 25, or where the **Contractor** believes that it or any of its **Subcontractors** is performing **Extra Work** but a final determination by **Agency** has not been made, or the **Contractor** or any of its **Subcontractors** is performing disputed **Work** (whether on or off the **Site**), or complying with a determination or order under protest in accordance with Articles 11, 27, and 30, in each such case the **Contractor** shall furnish the **Resident Engineer** daily with three (3) copies of written statements signed by the **Contractor's** representative at the **Site** showing:

28.1.1 The name, trade, and number of each worker employed on such **Work** or engaged in complying with such determination or order, the number of hours employed, and the character of the **Work** each is doing; and

28.1.2 The nature and quantity of any materials, plant and equipment furnished or used in connection with the performance of such **Work** or compliance with such determination or order, and from whom purchased or rented.

28.2 A copy of such statement will be countersigned by the **Resident Engineer**, noting thereon any items not agreed to or questioned, and will be returned to the **Contractor** within two (2) **Days** after submission.

28.3 The **Contractor** and its **Subcontractors**, when required by the **Commissioner**, or the **Comptroller**, shall also produce for inspection, at the office of the **Contractor** or **Subcontractor**, any and all of its books, bid documents, financial statements, vouchers, records, daily job diaries and reports,

and cancelled checks, and any other documents relating to showing the nature and quantity of the labor, materials, plant and equipment actually used in the performance of such **Work**, or in complying with such determination or order, and the amounts expended therefor, and shall permit the **Commissioner** and the **Comptroller** to make such extracts therefrom, or copies thereof, as they or either of them may desire.

28.4 In connection with the examination provided for herein, the **Commissioner**, upon demand therefor, will produce for inspection by the **Contractor** such records as the **Agency** may have with respect to such **Extra Work** or disputed **Work** performed under protest pursuant to order of the **Commissioner**, except those records and reports which may have been prepared for the purpose of determining the accuracy and validity of the **Contractor's** claim.

28.5 Failure to comply strictly with these requirements shall constitute a waiver of any claim for extra compensation or damages on account of the performance of such **Work** or compliance with such determination or order.

ARTICLE 29. OMITTED WORK

29.1 If any **Contract Work** in a lump sum **Contract**, or if any part of a lump sum item in a unit price, lump sum, or percentage-bid **Contract** is omitted by the **Commissioner** pursuant to Article 33, the **Contract** price, subject to audit by the EAO, shall be reduced by a pro rata portion of the lump sum bid amount based upon the percent of **Work** omitted subject to Article 29.4. For the purpose of determining the pro rata portion of the lump sum bid amount, the bid breakdown submitted in accordance with Article 41 shall be considered, but shall not be the determining factor.

29.2 If the whole of a lump sum item or units of any other item is so omitted by the **Commissioner** in a unit price, lump sum, or percentage-bid **Contract**, then no payment will be made therefor except as provided in Article 29.4.

29.3 For units that have been ordered but are only partially completed, the unit price shall be reduced by a pro rata portion of the unit price bid based upon the percentage of **Work** omitted subject to Article 29.4.

29.4 In the event the **Contractor**, with respect to any omitted **Work**, has purchased any non-cancelable material and/or equipment that is not capable of use except in the performance of this **Contract** and has been specifically fabricated for the sole purpose of this **Contract**, but not yet incorporated into the **Work**, the **Contractor** shall be paid for such material and/or equipment in accordance with Article 64.2.1(b); provided, however, such payment is contingent upon the **Contractor's** delivery of such material and/or equipment in acceptable condition to a location designated by the **City**.

29.5 The **Contractor** agrees to make no claim for damages or for loss of overhead and profit with regard to any omitted **Work**.

ARTICLE 30. NOTICE AND DOCUMENTATION OF COSTS AND DAMAGES; PRODUCTION OF FINANCIAL RECORDS

30.1 If the **Contractor** shall claim to be sustaining damages by reason of any act or omission of the **City** or its agents, it shall submit to the **Commissioner** within forty-five (45) **Days** from the time such damages are first incurred, and every thirty (30) **Days** thereafter to the extent additional damages are being incurred for the same condition, verified statements of the details and the amounts of such

damages, together with documentary evidence of such damages. The **Contractor** may submit any of the above statements within such additional time as may be granted by the **Commissioner** in writing upon written request therefor. Failure of the **Commissioner** to respond in writing to a written request for additional time within thirty (30) **Days** shall be deemed a denial of the request. On failure of the **Contractor** to strictly comply with the foregoing provisions, such claims shall be deemed waived and no right to recover on such claims shall exist. Damages that the **Contractor** may claim in any action or dispute resolution procedure arising under or by reason of this **Contract** shall not be different from or in excess of the statements and documentation made pursuant to this Article 30. This Article 30.1 does not apply to claims submitted to the **Commissioner** pursuant to Article 11 or to claims disputing a determination under Article 27.

30.2 In addition to the foregoing statements, the **Contractor** shall, upon notice from the **Commissioner**, produce for examination at the **Contractor's** office, by the **Engineer**, **Architect** or **Project Manager**, all of its books of account, bills, invoices, payrolls, subcontracts, time books, daily reports, bank deposit books, bank statements, check books, and cancelled checks, showing all of its acts and transactions in connection with or relating to or arising by reason of this **Contract**, and submit itself and persons in its employment, for examination under oath by any person designated by the **Commissioner** or **Comptroller** to investigate claims made or disputes against the **City** under this **Contract**. At such examination, a duly authorized representative of the **Contractor** may be present.

30.3 In addition to the statements required under Article 28 and this Article 30, the **Contractor** and/or its **Subcontractor** shall, within thirty (30) **Days** upon notice from the **Commissioner** or **Comptroller**, produce for examination at the **Contractor's** and/or **Subcontractor's** office, by a representative of either the **Commissioner** or **Comptroller**, all of its books of account, bid documents, financial statements, accountant workpapers, bills, invoices, payrolls, subcontracts, time books, daily reports, bank deposit books, bank statements, check books, and cancelled checks, showing all of its acts and transactions in connection with or relating to or arising by reason of this **Contract**. Further, the **Contractor** and/or its **Subcontractor** shall submit any person in its employment, for examination under oath by any person designated by the **Commissioner** or **Comptroller** to investigate claims made or disputes against the **City** under this **Contract**. At such examination, a duly authorized representative of the **Contractor** may be present.

30.4 Unless the information and examination required under Article 30.3 is provided by the **Contractor** and/or its **Subcontractor** upon thirty (30) **Days'** notice from the **Commissioner** or **Comptroller**, or upon the **Commissioner's** or **Comptroller's** written authorization to extend the time to comply, the **City** shall be released from all claims arising under, relating to or by reason of this **Contract**, except for sums certified by the **Commissioner** to be due under the provisions of this **Contract**. It is further stipulated and agreed that no person has the power to waive any of the foregoing provisions and that in any action or dispute resolution procedure against the **City** to recover any sum in excess of the sums certified by the **Commissioner** to be due under or by reason of this **Contract**, the **Contractor** must allege in its complaint and prove, at trial or during such dispute resolution procedure, compliance with the provisions of this Article 30.

30.5 In addition, after the commencement of any action or dispute resolution procedure by the **Contractor** arising under or by reason of this **Contract**, the **City** shall have the right to require the **Contractor** to produce for examination under oath, up until the trial of the action or hearing before the Contract Dispute Resolution Board, the books and documents described in Article 30.3 and submit itself and all persons in its employ for examination under oath. If this Article 30 is not complied with as required, then the **Contractor** hereby consents to the dismissal of the action or dispute resolution procedure.

CHAPTER VII: POWERS OF THE RESIDENT ENGINEER,THE ENGINEER OR ARCHITECT AND THE COMMISSIONER

ARTICLE 31. THE RESIDENT ENGINEER

31.1 The **Resident Engineer** shall have the power to inspect, supervise, and control the performance of the **Work**, subject to review by the **Commissioner**. The **Resident Engineer** shall not, however, have the power to issue an **Extra Work** order, except as specifically designated in writing by the **Commissioner**.

ARTICLE 32. THE ENGINEER OR ARCHITECT OR PROJECT MANAGER

32.1 The **Engineer** or **Architect** or **Project Manager**, in addition to those matters elsewhere herein delegated to the **Engineer** and expressly made subject to his/her determination, direction or approval, shall have the power, subject to review by the **Commissioner**:

32.1.1 To determine the amount, quality, and location of the **Work** to be paid for hereunder; and

32.1.2 To determine all questions in relation to the **Work**, to interpret the **Contract Drawings**, **Specifications**, and **Addenda**, and to resolve all patent inconsistencies or ambiguities therein; and

32.1.3 To determine how the **Work** of this **Contract** shall be coordinated with **Work** of **Other Contractors** engaged simultaneously on this **Project**, including the power to suspend any part of the **Work**, but not the whole thereof; and

32.1.4 To make minor changes in the **Work** as he/she deems necessary, provided such changes do not result in a net change in the cost to the **City** or to the **Contractor** of the **Work** to be done under the **Contract**; and

32.1.5 To amplify the **Contract Drawings**, add explanatory information and furnish additional **Specifications** and drawings, consistent with this **Contract**.

32.2 The foregoing enumeration shall not imply any limitation upon the power of the **Engineer** or **Architect** or **Project Manager**, for it is the intent of this **Contract** that all of the **Work** shall generally be subject to his/her determination, direction, and approval, except where the determination, direction or approval of someone other than the **Engineer** or **Architect** or **Project Manager** is expressly called for herein.

32.3 The **Engineer** or **Architect** or **Project Manager** shall not, however, have the power to issue an **Extra Work** order, except as specifically designated in writing by the **Commissioner**.

ARTICLE 33. THE COMMISSIONER

33.1 The **Commissioner**, in addition to those matters elsewhere herein expressly made subject to his/her determination, direction or approval, shall have the power:

33.1.1 To review and make determinations on any and all questions in relation to this **Contract** and its performance; and

33.1.2 To modify or change this **Contract** so as to require the performance of **Extra Work** (subject, however, to the limitations specified in Article 25) or the omission of **Contract Work**; and

33.1.3 To suspend the whole or any part of the **Work** whenever in his/her judgment such suspension is required:

33.1.3(a) In the interest of the **City** generally; or

33.1.3(b) To coordinate the **Work** of the various contractors engaged on this **Project** pursuant to the provisions of Article 12; or

33.1.3(c) To expedite the completion of the entire **Project** even though the completion of this particular **Contract** may thereby be delayed.

ARTICLE 34. NO ESTOPPEL

34.1 Neither the **City** nor any **Agency**, official, agent or employee thereof, shall be bound, precluded or estopped by any determination, decision, approval, order, letter, payment or certificate made or given under or in connection with this **Contract** by the **City**, the **Commissioner**, the **Engineer**, the **Resident Engineer**, or any other official, agent or employee of the **City**, either before or after the final completion and acceptance of the **Work** and payment therefor:

34.1.1 From showing the true and correct classification, amount, quality or character of the **Work** actually done; or that any such determination, decision, order, letter, payment or certificate was untrue, incorrect or improperly made in any particular, or that the **Work**, or any part thereof, does not in fact conform to the requirements of this **Contract**; and

34.1.2 From demanding and recovering from the **Contractor** any overpayment made to it, or such damages as the **City** may sustain by reason of the **Contractor's** failure to perform each and every part of its **Contract**.

CHAPTER VIII: LABOR PROVISIONS

ARTICLE 35. EMPLOYEES

35.1 The **Contractor** and its **Subcontractors** shall not employ on the **Work**:

35.1.1 Anyone who is not competent, faithful and skilled in the **Work** for which he/she shall be employed; and whenever the **Commissioner** shall inform the **Contractor**, in writing, that any employee is, in his/her opinion, incompetent, unfaithful or disobedient, that employee shall be discharged from the **Work** forthwith, and shall not again be employed upon it; or

35.1.2 Any labor, materials or means whose employment, or utilization during the course of this **Contract**, may tend to or in any way cause or result in strikes, work stoppages, delays, suspension of **Work** or similar troubles by workers employed by the **Contractor** or its **Subcontractors**, or by any of the trades working in or about the buildings and premises where **Work** is being performed under this **Contract**, or by **Other Contractors** or their **Subcontractors** pursuant to other contracts, or on any other building or premises owned or operated by the **City**, its **Agencies**, departments, boards or authorities. Any violation by the **Contractor** of this requirement may, upon certification of the **Commissioner**, be considered as proper and sufficient cause for declaring the **Contractor** to be in default, and for the **City** to take action against it as set forth in Chapter X of this **Contract**, or such other article of this **Contract** as the Commissioner may deem proper; or

35.1.3 In accordance with Section 220.3-e of the Labor Law of the State of New York (hereinafter "Labor Law"), the **Contractor** and its **Subcontractors** shall not employ on the **Work** any apprentice, unless he/she is a registered individual, under a bona fide program registered with the New York State Department of Labor. The allowable ratio of apprentices to journey-level workers in any craft classification shall not be greater than the ratio permitted to the **Contractor** as to its work force on any job under the registered program. Any employee listed on a payroll at an apprentice wage rate, who is not registered as above, shall be paid the wage rate determined by the **Comptroller** of the **City** for the classification of **Work** actually performed. The **Contractor** or **Subcontractor** will be required to furnish written evidence of the registration of its program and apprentices as well as all the appropriate ratios and wage rates, for the area of the construction prior to using any apprentices on the **Contract Work**.

35.2 If the total cost of the **Work** under this **Contract** is at least two hundred fifty thousand ($250,000) dollars, all laborers, workers, and mechanics employed in the performance of the **Contract** on the public work site, either by the **Contractor**, **Subcontractor** or other person doing or contracting to do the whole or a part of the **Work** contemplated by the **Contract**, shall be certified prior to performing any **Work** as having successfully completed a course in construction safety and health approved by the United States Department of Labor's Occupational Safety and Health Administration that is at least ten (10) hours in duration.

35.3 In accordance with Local Law Nos. 30-2012 and 33-2012, codified at sections 6-132 and 12-113 of the Administrative Code, respectively,

35.3.1 The **Contractor** shall not take an adverse personnel action with respect to an officer or employee in retaliation for such officer or employee making a report of information concerning conduct which such officer or employee knows or reasonably believes to involve corruption, criminal activity, conflict of interest, gross mismanagement or abuse of authority by any officer or employee relating to this **Contract** to (a) the Commissioner of the Department of Investigation, (b) a member of the New York City Council, the Public Advocate, or the **Comptroller**, or (c) the **CCPO**, **ACCO**, **Agency** head, or **Commissioner**.

35.3.2 If any of the **Contractor**'s officers or employees believes that he or she has been the subject of an adverse personnel action in violation of Article 35.3.1, he or she shall be entitled to bring a cause of action against the **Contractor** to recover all relief necessary to make him or her whole. Such relief may include but is not limited to: (a) an injunction to restrain continued retaliation, (b) reinstatement to the position such employee would have had but for the retaliation or to an equivalent position, (c) reinstatement of full fringe benefits and seniority rights, (d) payment of two times back

pay, plus interest, and (e) compensation for any special damages sustained as a result of the retaliation, including litigation costs and reasonable attorney's fees.

35.3.3 The **Contractor** shall post a notice provided by the **City** in a prominent and accessible place on any site where work pursuant to the **Contract** is performed that contains information about:

35.3.3(a) how its employees can report to the New York City Department of Investigation allegations of fraud, false claims, criminality or corruption arising out of or in connection with the **Contract**; and

35.3.3(b) the rights and remedies afforded to its employees under Administrative Code sections 7-805 (the New York City False Claims Act) and 12-113 (the Whistleblower Protection Expansion Act) for lawful acts taken in connection with the reporting of allegations of fraud, false claims, criminality or corruption in connection with the **Contract**.

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

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

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

35.5 Paid Sick Leave Law.

35.5.1 Introduction and General Provisions.

35.5.1(a) The Earned Sick Time Act, also known as the Paid Sick Leave Law ("PSLL"), requires covered employees who annually perform more than 80 hours of work in New York City to be provided with paid sick time.[2] Contractors of the **City** or of other governmental entities may be required to provide sick time pursuant to the PSLL.

35.5.1(b) The PSLL became effective on April 1, 2014, and is codified at Title 20, Chapter 8, of the New York City Administrative Code. It is administered by the City's Department of Consumer Affairs ("DCA"); DCA's rules promulgated under the PSLL are codified at Chapter 7 of Title 6 of the Rules of the City of New York ("Rules").

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

35.5.1(c) The **Contractor** agrees to comply in all respects with the PSLL and the Rules, and as amended, if applicable, in the performance of this **Contract**. The **Contractor** further acknowledges that such compliance is a material term of this **Contract** and that failure to comply with the PSLL in performance of this **Contract** may result in its termination.

35.5.1(d) The **Contractor** must notify the **Agency Chief Contracting Officer** of the **Agency** with whom it is contracting in writing within ten (10) days of receipt of a complaint (whether oral or written) regarding the PSLL involving the performance of this **Contract**. Additionally, the **Contractor** must cooperate with DCA's education efforts and must comply with DCA's subpoenas and other document demands as set forth in the PSLL and Rules.

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

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

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

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

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

i. such employee's mental illness, physical illness, injury, or health condition or the care of such illness, injury, or condition or such employee's need for medical diagnosis or preventive medical care;
ii. such employee's care of a family member (an employee's child, spouse, domestic partner, parent, sibling, grandchild or grandparent, or the child or parent of an employee's spouse or domestic partner) who has a mental

illness, physical illness, injury or health condition or who has a need for medical diagnosis or preventive medical care;

iii. closure of such employee's place of business by order of a public official due to a public health emergency; or

iv. such employee's need to care for a child whose school or childcare provider has been closed due to a public health emergency.

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

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

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

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

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

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

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

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

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

35.5.3(f) an employee in a work study program under Section 2753 of Chapter 42 of the United States Code;

35.5.3(g) an employee whose work is compensated by a qualified scholarship program as that term is defined in the Internal Revenue Code, Section 117 of Chapter 20 of the United States Code; or

35.5.3(h) a participant in a Work Experience Program (WEP) under section 336-c of the New York State Social Services Law.

35.5.4 Retaliation Prohibited. An employer may not threaten or engage in retaliation against an employee for exercising or attempting in good faith to exercise any right provided by the PSLL. In addition, an employer may not interfere with any investigation, proceeding, or hearing pursuant to the PSLL.

35.5.5 Notice of Rights.

35.5.5(a) An employer must provide its employees with written notice of their rights pursuant to the PSLL. Such notice must be in English and the primary language spoken by an employee, provided that DCA has made available a translation into such language. Downloadable notices are available on DCA's website at http://www.nyc.gov/html/dca/html/law/PaidSickLeave.shtml.

35.5.5(b) Any person or entity that willfully violates these notice requirements is subject to a civil penalty in an amount not to exceed fifty dollars for each employee who was not given appropriate notice.

35.5.6 Records. An employer must retain records documenting its compliance with the PSLL for a period of at least three years, and must allow DCA to access such records in furtherance of an investigation related to an alleged violation of the PSLL.

35.5.7 Enforcement and Penalties.

35.5.7(a) Upon receiving a complaint alleging a violation of the PSLL, DCA has the right to investigate such complaint and attempt to resolve it through mediation. Within 30 **Days** of written notification of a complaint by DCA, or sooner in certain circumstances, the employer must provide DCA with a written response and such other information as DCA may request. If DCA believes that a violation of the PSLL has occurred, it has the right to issue a notice of violation to the employer.

35.5.7(b) DCA has the power to grant an employee or former employee all appropriate relief as set forth in New York City Administrative Code § 20-924(d). Such relief may include, among other remedies, treble damages for the wages that should have been paid, damages for unlawful retaliation, and damages and reinstatement for unlawful discharge. In addition, DCA may impose on an employer found to have violated the PSLL civil penalties not to exceed $500 for a first violation, $750 for a second violation within two years of the first violation, and $1,000 for each succeeding violation within two years of the previous violation.

35.5.8 More Generous 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 (l) by not enrolling its business with HireNYC; (2) by not informing HireNYC, as required, of open positions; or (3) by failing to interview a qualified candidate, the **Agency** may assess liquidated damages in the amount of two-thousand five hundred dollars ($2,500) per breach. For all other events of noncompliance with the terms of this Article 35.6, the **Agency** may assess liquidated damages in the amount of five hundred dollars ($500) per breach. Furthermore, in the event the **Contractor** breaches the requirements of this Article 35.6 during the term of the **Contract**, the **City** may hold the **Contractor** in default of this **Contract**.

35.6.4 Audit Compliance. In addition to the auditing requirements set forth in other parts of the **Contract**, the **Contractor** shall permit SBS and the **City** to inspect any and all records concerning or relating to job openings or the hiring of individuals for work arising from the **Contract** and located in New York City. The **Contractor** shall permit an inspection within seven (7) business days of the request.

35.6.5 Other Reporting Requirements. The **Contractor** shall report to the **City**, on a monthly basis, all information reasonably requested by the **City** that is necessary for the **City** to comply with any reporting requirements imposed by **Law**, including any requirement that the **City** maintain a publicly accessible database. In addition, the **Contractor** agrees to comply with all reporting requirements imposed by **Law**, or as otherwise requested by the **City**.

35.6.6 Federal Hiring Requirements. If this **Contract** is federally funded (as indicated elsewhere in this Contract), the **Contractor** shall comply with all federal hiring requirements as may be set forth in this **Contract**, including, as applicable: (a) Section 3 of the HUD Act of 1968, which requires, to the greatest extent feasible, economic opportunities for 30 percent of new hires be given to low- and very low-income persons, particularly persons who are recipients of HUD assistance for housing and Executive Order 11246, which prohibits discrimination in employment due to race, color, religion, sex or national origin, and requires the implementation of goals for minority and female participation for work involving any construction trade.

ARTICLE 36. NO DISCRIMINATION

36.1 The **Contractor** specifically agrees, as required by Labor Law Section 220-e, as amended, that:

36.1.1 In the hiring of employees for the performance of **Work** under this **Contract** or any subcontract hereunder, neither the **Contractor**, **Subcontractor**, nor any person acting on behalf of such **Contractor** or **Subcontractor**, shall by reason of race, creed, color or national origin discriminate against any citizen of the State of New York who is qualified and available to perform the **Work** to which the employment relates;

36.1.2 Neither the **Contractor**, **Subcontractor**, nor any person on its behalf shall, in any manner, discriminate against or intimidate any employee hired for the performance of **Work** under this **Contract** on account of race, creed, color or national origin;

36.1.3 There may be deducted from the amount payable to the **Contractor** by the **City** under this **Contract** a penalty of fifty ($50.00) dollars for each person for each **Day** during which such person was discriminated against or intimidated in violation of the provisions of this **Contract**; and

36.1.4 This **Contract** may be cancelled or terminated by the **City** and all moneys due or to become due hereunder may be forfeited, for a second or any subsequent violation of the terms or conditions of this Article 36.

36.1.5 This Article 36 covers all construction, alteration and repair of any public building or public work occurring in the State of New York and the manufacture, sale, and distribution of materials, equipment, and supplies to the extent that such operations are performed within the State of New York pursuant to this **Contract**.

36.2 The **Contractor** specifically agrees, as required by Section 6-108 of the Administrative Code, as amended, that:

36.2.1 It shall be unlawful for any person engaged in the construction, alteration or repair of buildings or engaged in the construction or repair of streets or highways pursuant to a **Contract** with the **City** or engaged in the manufacture, sale or distribution of materials, equipment or supplies pursuant to a **Contract** with the **City** to refuse to employ or to refuse to continue in any employment any person on account of the race, color or creed of such person.

36.2.2 It shall be unlawful for any person or any servant, agent or employee of any person, described in Article 36.1.2, to ask, indicate or transmit, orally or in writing, directly or indirectly, the race, color or creed or religious affiliation of any person employed or seeking employment from such person, firm or corporation.

36.2.3 Breach of the foregoing provisions shall be deemed a violation of a material provision of this **Contract**.

36.2.4 Any person, or the employee, manager or owner of or officer of such firm or corporation who shall violate any of the provisions of this Article 36.2 shall, upon

conviction thereof, be punished by a fine of not more than one hundred ($100.00) dollars or by imprisonment for not more than thirty (30) **Days**, or both.

36.3 This **Contract** is subject to the requirements of Executive Order No. 50 (1980) ("E.O. 50"), as revised, and the rules and regulations promulgated thereunder. No contract will be awarded unless and until these requirements have been complied with in their entirety. By signing this **Contract**, the **Contractor** agrees that it:

36.3.1 Will not engage in any unlawful discrimination against any employee or applicant for employment because of race, creed, color, national origin, sex, age, disability, marital status or sexual orientation with respect to all employment decisions including, but not limited to, recruitment, hiring, upgrading, demotion, downgrading, transfer, training, rates of pay or other forms of compensation, layoff, termination, and all other terms and conditions of employment; and

36.3.2 Will not engage in any unlawful discrimination in the selection of **Subcontractors** on the basis of the owner's race, color, creed, national origin, sex, age, disability, marital status or sexual orientation; and

36.3.3 Will state in all solicitations or advertisements for employees placed by or on behalf of the **Contractor** that all qualified applicants will receive consideration for employment without unlawful discrimination based on race, creed, color, national origin, sex, age, citizens status, disability, marital status, sexual orientation, or that it is an equal employment opportunity employer; and

36.3.4 Will send to each labor organization or representative of workers with which it has a collective bargaining agreement or other contract or memorandum of understanding, written notification of its equal employment opportunity commitments under E.O. 50 and the rules and regulations promulgated thereunder; and

36.3.5 Will furnish, before the award of the **Contract**, all information and reports, including an employment report, that are required by E.O. 50, the rules and regulations promulgated thereunder, and orders of the **City** Department of Business Services, Division of Labor Services (**DLS**) and will permit access to its books, records, and accounts by the **DLS** for the purposes of investigation to ascertain compliance with such rules, regulations, and orders.

36.4 The **Contractor** understands that in the event of its noncompliance with the nondiscrimination clauses of this **Contract** or with any of such rules, regulations, or orders, such noncompliance shall constitute a material breach of this **Contract** and noncompliance with E.O. 50 and the rules and regulations promulgated thereunder. After a hearing held pursuant to the rules of the **DLS**, the Director of the **DLS** may direct the **Commissioner** to impose any or all of the following sanctions:

36.4.1 Disapproval of the **Contractor**; and/or

36.4.2 Suspension or termination of the **Contract**; and/or

36.4.3 Declaring the **Contractor** in default; and/or

36.4.4 In lieu of any of the foregoing sanctions, the Director of the **DLS** may impose an employment program.

In addition to any actions taken under this **Contract**, failure to comply with E.O. 50 and the rules and regulations promulgated thereunder, in one or more instances, may result in a **City Agency** declaring the **Contractor** to be non-responsible in future procurements. The **Contractor** further agrees that it will refrain from entering into any **Contract** or **Contract** modification subject to E.O. 50 and the rules and regulations promulgated thereunder with a **Subcontractor** who is not in compliance with the requirements of E.O. 50 and the rules and regulations promulgated thereunder.

36.5 The **Contractor** specifically agrees, as required by Section 6-123 of the Administrative Code, that:

36.5.1 The **Contractor** will not engage in any unlawful discriminatory practice in violation of Title 8 of the Administrative Code; and

36.5.2 Any failure to comply with this Article 36.5 may subject the **Contractor** to the remedies set forth in Section 6-123 of the Administrative Code, including, where appropriate, sanctions such as withholding of payment, imposition of an employment program, finding the **Contractor** to be in default, cancellation of the **Contract**, or any other sanction or remedy provided by **Law** or **Contract**.

ARTICLE 37. LABOR LAW REQUIREMENTS

37.1 The **Contractor** shall strictly comply with all applicable provisions of the Labor Law, as amended. Such compliance is a material term of this **Contract**.

37.2 The **Contractor** specifically agrees, as required by Labor Law Sections 220 and 220-d, as amended, that:

37.2.1 Hours of **Work**: No laborer, worker, or mechanic in the employ of the **Contractor**, **Subcontractor** or other person doing or contracting to do the whole or a part of the **Work** contemplated by this **Contract** shall be permitted or required to work more than eight (8) hours in any one (1) **Day**, or more than five (5) **Days** in any one (1) week, except as provided in the Labor Law and in cases of extraordinary emergency including fire, flood, or danger to life or property, or in the case of national emergency when so proclaimed by the President of the United States of America.

37.2.2 In situations in which there are not sufficient laborers, workers, and mechanics who may be employed to carry on expeditiously the **Work** contemplated by this **Contract** as a result of such restrictions upon the number of hours and **Days** of labor, and the immediate commencement or prosecution or completion without undue delay of the **Work** is necessary for the preservation of the **Site** and/or for the protection of the life and limb of the persons using the same, such laborers, workers, and mechanics shall be permitted or required to work more than eight (8) hours in any one (1) **Day**; or five (5) **Days** in any one (1) week; provided, however, that upon application of any **Contractor**, the **Commissioner** shall have first certified to the Commissioner of Labor of the State of New York (hereinafter "Commissioner of Labor") that such public **Work** is of an important nature and that a delay in carrying it to completion would result in serious disadvantage to the public; and provided, further, that such Commissioner of Labor shall have determined that such an emergency does in fact exist as provided in Labor Law Section 220.2.

37.2.3 Failure of the **Commissioner** to make such a certification to the Commissioner of Labor shall not entitle the **Contractor** to damages for delay or for any cause whatsoever.

37.2.4 Prevailing Rate of Wages: The wages to be paid for a legal day's **Work** to laborers, workers, or mechanics employed upon the **Work** contemplated by this **Contract** or upon any materials to be used thereon shall not be less than the "prevailing rate of wage" as defined in Labor Law Section 220, and as fixed by the **Comptroller** in the attached Schedule of Wage Rates and in updated schedules thereof. The prevailing wage rates and supplemental benefits to be paid are those in effect at the time the **Work** is being performed.

37.2.5 Requests for interpretation or correction in the Information for Bidders includes all requests for clarification of the classification of trades to be employed in the performance of the **Work** under this **Contract**. In the event that a trade not listed in the **Contract** is in fact employed during the performance of this **Contract**, the **Contractor** shall be required to obtain from the **Agency** the prevailing wage rates and supplementary benefits for the trades used and to complete the performance of this **Contract** at the price at which the **Contract** was awarded.

37.2.6 Minimum Wages: Except for employees whose wage is required to be fixed pursuant to Labor Law Section 220, all persons employed by the **Contractor** and any **Subcontractor** in the manufacture or furnishing of the supplies, materials, or equipment, or the furnishing of work, labor, or services, used in the performance of this **Contract**, shall be paid, without subsequent deduction or rebate unless expressly authorized by **Law**, not less than the sum mandated by **Law**.

37.3 Working Conditions: No part of the **Work**, labor or services shall be performed or rendered by the **Contractor** in any plants, factories, buildings or surroundings or under working conditions which are unsanitary or hazardous or dangerous to the health and safety of employees engaged in the performance of this **Contract**. Compliance with the safety, sanitary, and factory inspection **Laws** of the state in which the **Work** is to be performed shall be prima facie evidence of compliance with this Article 37.3.

37.4 Prevailing Wage Enforcement: The **Contractor** agrees to pay for all costs incurred by the **City** in enforcing prevailing wage requirements, including the cost of any investigation conducted by or on behalf of the **Agency** or the **Comptroller,** where the **City** discovers a failure to comply with any of the requirements of this Article 37 by the **Contractor** or its **Subcontractor(s)**. The **Contractor** also agrees that, should it fail or refuse to pay for any such investigation, the **Agency** is hereby authorized to deduct from a **Contractor's** account an amount equal to the cost of such investigation.

37.4.1 The Labor Law Section 220 and Section 220-d, as amended, provide that this **Contract** shall be forfeited and no sum paid for any **Work** done hereunder on a second conviction for willfully paying less than:

37.4.1(a) The stipulated prevailing wage scale as provided in Labor Law section 220, as amended, or

37.4.1(b) The stipulated minimum hourly wage scale as provided in Labor Law section 220-d, as amended.

37.4.2 For any breach or violation of either working conditions (Article 37.3) or minimum wages (Article 37.2.6) provisions, the party responsible therefor shall be liable to the **City** for liquidated damages, which may be withheld from any amounts due on any contracts with the **City** of such party responsible, or may be recovered in actions brought by the **City**

Corporation Counsel in the name of the **City**, in addition to damages for any other breach of this **Contract**, for a sum equal to the amount of any underpayment of wages due to any employee engaged in the performance of this **Contract**. In addition, the **Commissioner** shall have the right to cancel contracts and enter into other contracts for the completion of the original contract, with or without public letting, and the original **Contractor** shall be liable for any additional cost. All sums withheld or recovered as deductions, rebates, refunds, or underpayment of wages hereunder, shall be held in a special deposit account and shall be paid without interest, on order of the **Comptroller**, directly to the employees who have been paid less than minimum rates of pay as set forth herein and on whose account such sums were withheld or recovered, provided that no claims by employees for such payments shall be entertained unless made within two (2) years from the date of actual notice to the **Contractor** of the withholding or recovery of such sums by the **City**.

37.4.3 A determination by the **Comptroller** that a **Contractor** and/or its **Subcontractor** willfully violated Labor Law Section 220 will be forwarded to the **City's** five District Attorneys for review.

37.4.4 The **Contractor's** or **Subcontractor's** noncompliance with this Article 37.4 and Labor Law Section 220 may result in an unsatisfactory performance evaluation and the **Comptroller** may also find and determine that the **Contractor** or **Subcontractor** willfully violated the New York Labor **Law**.

37.4.4(a) An unsatisfactory performance evaluation for noncompliance with this Article 37.4 may result in a determination that the **Contractor** is a non-responsible bidder on subsequent procurements with the **City** and thus a rejection of a future award of a contract with the **City**, as well as any other sanctions provided for by **Law**.

37.4.4(b) Labor Law Section 220-b, as amended, provides that when two (2) final determinations have been rendered against a **Contractor** or **Subcontractor** within any consecutive six (6) year period determining that such **Contractor** or **Subcontractor** has willfully failed to pay the prevailing rate of wages or to provide supplements in accordance with the Labor Law and this Article 37.4, whether such failures were concurrent or consecutive and whether or not such final determinations concerning separate public works projects are rendered simultaneously, such **Contractor** or **Subcontractor** shall be ineligible to submit a bid on or be awarded any public works contract with the **City** for a period of five (5) years from the second final determination. If the final determination involves the falsification of payroll records or the kickback of wages or supplements, the **Contractor** or **Subcontractor** shall be ineligible to submit a bid on or be awarded any public works contract with the **City** for a period of five (5) years from the first final determination.

37.4.4(c) Labor Law Section 220, as amended, provides that the **Contractor** or **Subcontractor** found to have violated this Article 37.4 may be directed to make payment of wages or supplements including interest found to be due, and the **Contractor** or **Subcontractor** may be directed to make payment of a further sum as a civil penalty in an amount not exceeding twenty-five (25%) percent of the total amount found to be due.

37.5 The **Contractor** and its **Subcontractors** shall within ten (10) **Days** after mailing of a Notice of Award or written order, post in prominent and conspicuous places in each and every plant, factory, building, and structure where employees of the **Contractor** and its **Subcontractors** engaged in the

performance of this **Contract** are employed, notices furnished by the **City**, in relation to prevailing wages and supplements, minimum wages, and other stipulations contained in Sections 220 and 220-h of the Labor Law, and the **Contractor** and its **Subcontractors** shall continue to keep such notices posted in such prominent and conspicuous places until **Final Acceptance** of the supplies, materials, equipment, or **Work**, labor, or services required to be furnished or rendered under this **Contract**.

37.6 The **Contractor** shall strictly comply with all of the provisions of Articles 37.6.1 through 37.6.5, and provide for all workers, laborers or mechanics in its employ, the following:

37.6.1 Notices Posted At **Site**: Post, in a location designated by the **City**, schedules of prevailing wages and supplements for this **Project**, a copy of all re-determinations of such schedules for the **Project**, the Workers' Compensation **Law** Section 51 notice, all other notices required by **Law** to be posted at the **Site**, the **City** notice that this **Project** is a public works project on which each worker is entitled to receive the prevailing wages and supplements for the occupation at which he or she is working, and all other notices which the **City** directs the **Contractor** to post. The **Contractor** shall provide a surface for such notices which is satisfactory to the **City**. The **Contractor** shall maintain and keep current such notices in a legible manner and shall replace any notice or schedule which is damaged, defaced, illegible or removed for any reason. The **Contractor** shall post such notices before commencing any **Work** on the **Site** and shall maintain such notices until all **Work** on the **Site** is complete; and

37.6.2 Daily **Site** Sign-in Sheets: Maintain daily **Site** sign-in sheets, and require that **Subcontractors** maintain daily **Site** sign-in sheets for its employees, which include blank spaces for an employee's name to be both printed and signed, job title, date started and Social Security number, the time the employee began work and the time the employee left work, until **Final Acceptance** of the supplies, materials, equipment, or **Work**, labor, or services to be furnished or rendered under this **Contract** unless exception is granted by the **Comptroller** upon application by the **Agency**. In the alternative, subject to the approval of the **CCPO**, the **Contractor** and **Subcontractor** may maintain an electronic or biometric sign-in system, which provides the information required by this Article 37.6.2; and

37.6.3 Individual Employee Information Notices: Distribute a notice to each worker, laborer or mechanic employed under this **Contract**, in a form provided by the **Agency**, that this **Project** is a public works project on which each worker, laborer or mechanic is entitled to receive the prevailing rate of wages and supplements for the occupation at which he or she is working. If the total cost of the **Work** under this **Contract** is at least two hundred fifty thousand ($250,000) dollars, such notice shall also include a statement that each worker, laborer or mechanic must be certified prior to performing any **Work** as having successfully completed a course in construction safety and health approved by the United States Department of Labor's Occupational Safety and Health Administration that is at least ten (10) hours in duration. Such notice shall be distributed to each worker before he or she starts performing any **Work** of this **Contract** and with the first paycheck after July first of each year. "Worker, laborer or mechanic" includes employees of the **Contractor** and all **Subcontractors** and all employees of suppliers entering the **Site**. At the time of distribution, the **Contractor** shall have each worker, laborer or mechanic sign a statement, in a form provided by the **Agency**, certifying that the worker has received the notice required by this Article 37.6.3, which signed statement shall be maintained with the payroll records required by this **Contract**; and

37.6.3(a) The **Contractor** and each **Subcontractor** shall notify each worker, laborer or mechanic employed under this **Contract** in writing of the prevailing rate of

wages for their particular job classification. Such notification shall be given to every worker, laborer, and mechanic on their first pay stub and with every pay stub thereafter; and

37.6.4 **Site** Laminated Identification Badges: The **Contractor** shall provide laminated identification badges which include a photograph of the worker's, laborer's or mechanic's face and indicate the worker's, laborer's or mechanic's name, trade, employer's name, and employment starting date (month/day/year). Further, the **Contractor** shall require as a condition of employment on the **Site**, that each and every worker, laborer or mechanic wear the laminated identification badge at all times and that it may be seen by any representative of the **City**. The **Commissioner** may grant a written waiver from the requirement that the laminated identification badge include a photograph if the **Contractor** demonstrates that the identity of an individual wearing a laminated identification badge can be easily verified by another method; and

37.6.5 Language Other Than English Used On **Site**: Provide the **ACCO** notice when three (3) or more employees (worker and/or laborer and/or mechanic) on the **Site**, at any time, speak a language other than English. The **ACCO** will then provide the **Contractor** the notices described in Article 37.6.1 in that language or languages as may be required. The **Contractor** is responsible for all distributions under this Article 37; and

37.6.6 Provision of Records: The **Contractor** and **Subcontractor(s)** shall produce within five (5) **Days** on the **Site** of the **Work** and upon a written order of the **Engineer**, the **Commissioner**, the **ACCO**, the **Agency EAO**, or the **Comptroller,** such records as are required to be kept by this Article 37.6; and

37.6.7 The **Contractor** and **Subcontractor(s)** shall pay employees by check or direct deposit. If this **Contract** is for an amount greater than one million ($1,000,000) dollars, checks issued by the **Contractor** to covered employees shall be generated by a payroll service or automated payroll system (an in-house system may be used if approved by the **Agency**). For any subcontract for an amount greater than seven hundred fifty thousand ($750,000) dollars, checks issued by a **Subcontractor** to covered employees shall be generated by a payroll service or automated payroll system (an in-house system may be used if approved by the **Agency**); and

37.6.8 The failure of the **Contractor** or **Subcontractor(s)** to comply with the provisions of Articles 37.6.1 through 37.6.7 may result in the **Commissioner** declaring the **Contractor** in default and/or the withholding of payments otherwise due under the **Contract**.

37.7 The **Contractor** and its **Subcontractors** shall keep such employment and payroll records as are required by Section 220 of the Labor Law. The failure of the **Contractor** or **Subcontractor(s)** to comply with the provisions of this Article 37.7 may result in the **Commissioner** declaring the **Contractor** in default and/or the withholding of payments otherwise due under the **Contract.**

37.8 At the time the **Contractor** makes application for each partial payment and for final payment, the **Contractor** shall submit to the **Commissioner** a written payroll certification, in the form provided by this **Contract**, of compliance with the prevailing wage, minimum wage, and other provisions and stipulations required by Labor Law Section 220 and of compliance with the training requirements of Labor Law Section 220-h set forth in Article 35.2. This certification of compliance shall be a condition precedent to payment and no payment shall be made to the **Contractor** unless and until each such certification shall have been submitted to and received by the **Commissioner**.

37.9 This **Contract** is executed by the **Contractor** with the express warranty and representation that the **Contractor** is not disqualified under the provisions of Section 220 of the Labor Law from the award of the **Contract**.

37.10 Any breach or violation of any of the foregoing shall be deemed a breach or violation of a material provision of this **Contract**, and grounds for cancellation thereof by the **City**.

ARTICLE 38. PAYROLL REPORTS

38.1 The **Contractor** and its **Subcontractor(s)** shall maintain on the **Site** during the performance of the **Work** the original payrolls or transcripts thereof which the **Contractor** and its **Subcontractor(s)** are required to maintain and shall submit such original payrolls or transcripts, subscribed and affirmed by it as true, within thirty (30) **Days** after issuance of its first payroll, and every thirty (30) **Days** thereafter, pursuant to Labor Law Section 220(3-a)(a)(iii). The **Contractor** and **Subcontractor(s)** shall submit such original payrolls or transcripts along with each and every payment requisition. If payment requisitions are not submitted at least once a month, the **Contractor** and its **Subcontractor(s)** shall submit original payrolls and transcripts both along with its payment requisitions and independently of its payment requisitions.

38.2 The **Contractor** shall maintain payrolls or transcripts thereof for six (6) years from the date of completion of the **Work** on this **Contract**. If such payrolls and transcripts are maintained outside of New York City after the completion of the **Work** and their production is required pursuant to this Article 38, the **Contractor** shall produce such records in New York City upon request by the City.

38.3 The **Contractor** and **Subcontractor(s)** shall comply with any written order, direction, or request made by the **Engineer**, the **Commissioner**, the **ACCO**, the **Agency EAO**, the **Agency Labor Law Investigator(s)**, or the **Comptroller**, to provide to the requesting party any of the following information and/or records within five (5) **Days** of such written order, direction, or request:

38.3.1 Such original payrolls or transcripts thereof subscribed and affirmed by it as true and the statements signed by each worker pursuant to this Chapter VIII; and/or

38.3.2 Attendance sheets for each **Day** on which any employee of the **Contractor** and/or any of the **Subcontractor(s)** performed **Work** on the **Site**, which attendance sheet shall be in a form acceptable to the **Agency** and shall provide information acceptable to the **Agency** to identify each such employee; and/or

38.3.3 Any other information to satisfy the **Engineer**, the **Commissioner**, the **ACCO**, the **Agency EAO**, the **Agency Labor Law Investigator(s)** or the **Comptroller**, that this Chapter VIII and the Labor Law, as to the hours of employment and prevailing rates of wages and/or supplemental benefits, are being observed.

38.4 The failure of the **Contractor** or **Subcontractor(s)** to comply with the provisions of Articles 38.1 and/or 38.2 may result in the **Commissioner** declaring the **Contractor** in default and/or the withholding of payments otherwise due under the **Contract**.

ARTICLE 39. DUST HAZARDS

39.1 Should a harmful dust hazard be created in performing the **Work** of this **Contract**, for the elimination of which appliances or methods have been approved by the Board of Standards and Appeals

of the City of New York, such appliances and methods shall be installed, maintained, and effectively operated during the continuance of such harmful dust hazard. Failure to comply with this provision after notice shall make this **Contract** voidable at the sole discretion of the **City**.

CHAPTER IX: PARTIAL AND FINAL PAYMENTS

ARTICLE 40. CONTRACT PRICE

40.1 The **City** shall pay, and the **Contractor** agrees to accept, in full consideration for the **Contractor's** performance of the **Work** subject to the terms and conditions hereof, the lump sum price or unit prices for which this **Contract** was awarded, plus the amount required to be paid for any **Extra Work** ordered by the **Commissioner** under Article 25, less credit for any **Work** omitted pursuant to Article 29.

ARTICLE 41. BID BREAKDOWN ON LUMP SUM

41.1 Within fifteen (15) **Days** after the commencement date specified in the **Notice to Proceed** or **Order to Work**, unless otherwise directed by the **Resident Engineer**, the **Contractor** shall submit to the **Resident Engineer** a breakdown of its bid price, or of lump sums bid for items of the **Contract**, showing the various operations to be performed under the **Contract**, as directed in the progress schedule required under Article 9, and the value of each of such operations, the total of such items to equal the lump sum price bid. Said breakdown must be approved in writing by the **Resident Engineer**.

41.2 No partial payment will be approved until the **Contractor** submits a bid breakdown that is acceptable to the **Resident Engineer**.

41.3 The **Contractor** shall also submit such other information relating to the bid breakdown as directed by the **Resident Engineer**. Thereafter, the breakdown may be used only for checking the **Contractor's** applications for partial payments hereunder, but shall not be binding upon the **City**, the **Commissioner**, or the **Engineer** for any purpose whatsoever.

ARTICLE 42. PARTIAL PAYMENTS

42.1 From time to time as the **Work** progresses satisfactorily, but not more often than once each calendar month (except where the **Commissioner** approves in writing the submission of invoices on a more frequent basis and for invoices relating to **Work** performed pursuant to a change order), the **Contractor** may submit to the **Engineer** a requisition for a partial payment in the prescribed form, which shall contain an estimate of the quantity and the fair value of the **Work** done during the payment period.

42.2 Partial payments may be made for materials, fixtures, and equipment in advance of their actual incorporation in the **Work**, as the **Commissioner** may approve, and upon the terms and conditions set forth in the General Conditions.

42.3 The **Contractor** shall also submit to the **Commissioner** in connection with every application for partial payment a verified statement in the form prescribed by the **Comptroller** setting forth the information required under Labor Law Section 220-a.

42.4 Within thirty (30) **Days** after receipt of a satisfactory payment application, and within sixty (60) **Days** after receipt of a satisfactory payment application in relation to **Work** performed pursuant to a change order, the **Engineer** will prepare and certify, and the **Commissioner** will approve, a voucher for a partial payment in the amount of such approved estimate, less any and all deductions authorized to be made by the **Commissioner** under the terms of this **Contract** or by **Law**.

ARTICLE 43. PROMPT PAYMENT

43.1 The Prompt Payment provisions of the **PPB** Rules in effect at the time of the bid will be applicable to payments made under this **Contract**. The provisions require the payment to the **Contractor** of interest on payments made after the required payment date, except as set forth in the **PPB** Rules.

43.2 The **Contractor** shall submit a proper invoice to receive payment, except where the **Contract** provides that the **Contractor** will be paid at predetermined intervals without having to submit an invoice for each scheduled payment.

43.3 Determination of interest due will be made in accordance with the **PPB** Rules.

43.4 If the **Contractor** is paid interest, the proportionate share(s) of that interest shall be forwarded by the **Contractor** to its **Subcontractor(s)**.

43.5 The **Contractor** shall pay each **Subcontractor** or **Materialman** not later than seven (7) **Days** after receipt of payment out of amounts paid to the **Contractor** by the **City** for **Work** performed by the **Subcontractor** or **Materialman** under this **Contract**.

> 43.5.1 If **Contractor** fails to make any payment to any **Subcontractor** or **Materialman** within seven (7) **Days** after receipt of payment by the **City** pursuant to this Article 43.5, then the **Contractor** shall pay interest on amounts due to such **Subcontractor** or **Materialman** at the rate of interest in effect on the date such payment is made by the **Contractor** computed in accordance with Section 756-b (1)(b) of the New York General Business Law. Accrual of interest shall commence on the **Day** immediately following the expiration of the seventh **Day** following receipt of payment by the **Contractor** from the **City** and shall end on the date on which payment is made.

43.6 The **Contractor** shall include in each of its subcontracts a provision requiring each **Subcontractor** to make payment to each of its **Subcontractors** or **Materialmen** for **Work** performed under this **Contract** in the same manner and within the same time period set forth above.

ARTICLE 44. SUBSTANTIAL COMPLETION PAYMENT

44.1 The **Contractor** shall submit with the **Substantial Completion** requisition:

> 44.1.1 A final verified statement of any pending Article 27 disputes in accordance with the **PPB** Rules and this **Contract** and any and all alleged claims against the **City**, in any way connected with or arising out of this **Contract** (including those as to which details may have been furnished pursuant to Articles 11, 27, 28, and 30) setting forth with respect to each such claim the total amount thereof, the various items of labor and materials included therein, and the alleged value of each item; and if the alleged claim be one for delay, the alleged cause of each such delay, the period or periods of time, giving the dates when the

Contractor claims the performance of the **Work** or a particular part thereof was delayed, and an itemized statement and breakdown of the amount claimed for each such delay.

44.1.1(a) With respect to each such claim, the **Commissioner**, the **Comptroller** and, in the event of litigation, the **City** Corporation Counsel shall have the same right to inspect, and to make extracts or copies of, the **Contractor's** books, vouchers, records, etc., as is referred to in Articles 11, 27, 28, and 30. Nothing contained in this Article 44.1.1(a) is intended to or shall relieve the **Contractor** from the obligation of complying strictly with Articles 11, 27, 28, and 30. The **Contractor** is warned that unless such claims are completely set forth as herein required, the **Contractor** upon acceptance of the **Substantial Completion** payment pursuant to this Article 44, will have waived any such claims.

44.1.2 A **Final Approved Punch List**.

44.1.3 Where required, a request for an extension of time to achieve **Substantial Completion** or final extension of time.

44.2 The **Commissioner** shall issue a voucher calling for payment of any part or all of the balance due for **Work** performed under the **Contract**, including monies retained under Article 21, less any and all deductions authorized to be made by the **Commissioner**, under this **Contract** or by **Law**, and less twice the amount the **Commissioner** considers necessary to ensure the completion of the balance of the **Work** by the **Contractor**. Such a payment shall be considered a partial and not a final payment. No **Substantial Completion** payment shall be made under this Article 44 where the **Contractor** failed to complete the **Work** within the time fixed for such completion in the Schedule A of the General Conditions, or within the time to which completion may have been extended, until an extension or extensions of time for the completion of **Work** have been acted upon pursuant to Article 13.

44.3 No further partial payments shall be made to the **Contractor** after **Substantial Completion**, except the **Substantial Completion** payment and payment pursuant to any **Contractor's** requisition that were properly filed with the **Commissioner** prior to the date of **Substantial Completion**; however, the **Commissioner** may grant a waiver for further partial payments after the date of **Substantial Completion** to permit payments for change order **Work** and/or release of retainage and deposits pursuant to Articles 21 and 24. Such waiver shall be in writing.

44.4 The **Contractor** acknowledges that nothing contained in this Article 44 is intended to or shall in any way diminish the force and effect of Article 13.

ARTICLE 45. FINAL PAYMENT

45.1 After completion and **Final Acceptance** of the **Work**, the **Contractor** shall submit all required certificates and documents, together with a requisition for the balance claimed to be due under the **Contract**, less the amount authorized to be retained for maintenance under Article 24. Such submission shall be within 90 days of the date of the **Commissioner's** written determination of **Final Acceptance**, or within such additional time as may be granted by the **Commissioner** in writing. If the **Contractor** fails to submit all required certificates and documents within the time allowed, no payment of the balance claimed shall be made to the **Contractor** and the **Contractor** shall be deemed to have forfeited its right to payment of any balance claimed. A verified statement similar to that required in connection with applications for partial payments shall also be submitted to the **Commissioner**.

45.2 Amended Verified Statement of Claims: The **Contractor** shall also submit with the final requisition any amendments to the final verified statement of any pending dispute resolution procedures in accordance with the **PPB** Rules and this **Contract** and any and all alleged claims against the **City**, in any way connected with or arising out of this **Contract** (including those as to which details may have been furnished pursuant to Articles 11, 27, 28, and 30) that have occurred subsequent to **Substantial Completion**, setting forth with respect to each such claim the total amount thereof, the various items of labor and materials included therein, and the alleged value of each such item; and if the alleged claim be one for delay, the alleged cause of each such delay, the period or periods of time, giving the dates when the **Contractor** claims the performance of the **Work** or a particular part thereof was delayed, and an itemized statement and breakdown of the amount claimed for each such delay. With reference to each such claim, the **Commissioner**, the **Comptroller** and, in the event of litigation, the **City** Corporation Counsel shall have the same right to inspect, and to make extracts or copies of, the **Contractor's** books, vouchers, records, etc., as is referred to in Articles 11, 27, 28, and 30. Nothing contained in this Article 45.2, is intended to or shall relieve the **Contractor** from the obligation of complying strictly with Articles 11, 27, 28, and 30. The **Contractor** is warned that unless such claims are completely set forth as herein required, the **Contractor**, upon acceptance of the Final Payment pursuant to Article 46, will have waived any such claims.

45.3 Preparation of Final Voucher: Upon determining the balance due hereunder other than on account of claims, the **Engineer** will prepare and certify, for the Commissioner's approval, a voucher for final payment in that amount less any and all deductions authorized to be made by the **Commissioner** under this **Contract** or by **Law**. In the case of a lump sum **Contract**, the **Commissioner** shall certify the voucher for final payment within thirty (30) **Days** from the date of completion and acceptance of the **Work**, provided all requests for extensions of time have been acted upon.

45.3.1 All prior certificates and vouchers upon which partial payments were made, being merely estimates made to enable the **Contractor** to prosecute the **Work** more advantageously, shall be subject to correction in the final voucher, and the certification of the **Engineer** thereon and the approval of the **Commissioner** thereof, shall be conditions precedent to the right of the **Contractor** to receive any money hereunder. Such final voucher shall be binding and conclusive upon the **Contractor**.

45.3.2 Payment pursuant to such final voucher, less any deductions authorized to be made by the **Commissioner** under this **Contract** or by **Law**, shall constitute the final payment, and shall be made by the **Comptroller** within thirty (30) **Days** after the filing of such voucher in his/her office.

45.4 The **Contractor** acknowledges that nothing contained in this Article 45 is intended to or shall in any way diminish the force and effect of Article 13.

ARTICLE 46. ACCEPTANCE OF FINAL PAYMENT

46.1 The acceptance by the **Contractor**, or by anyone claiming by or through it, of the final payment, whether such payment be made pursuant to any judgment of any court, or otherwise, shall constitute and operate as a release of the **City** from any and all claims of and liability to the **Contractor** for anything heretofore done or furnished for the **Contractor** relating to or arising out of this **Contract** and the **Work** done hereunder, and for any prior act, neglect or default on the part of the **City** or any of its officials, agents or employees, excepting only a claim against the **City** for the amounts deducted or retained in accordance with the terms and provisions of this **Contract** or by **Law**, and excepting any claims, not otherwise waived, or any pending dispute resolution procedures which are contained in the

verified statement filed with the **Contractor's** substantial and final requisitions pursuant to Articles 44 and 45.

46.2 The **Contractor** is warned that the execution by it of a release, in connection with the acceptance of the final payment, containing language purporting to reserve claims other than those herein specifically excepted from the operation of this Article 46, or those for amounts deducted by the **Commissioner** from the final requisition or from the final payment as certified by the **Engineer** and approved by the **Commissioner**, shall not be effective to reserve such claims, anything stated to the **Contractor** orally or in writing by any official, agent or employee of the **City** to the contrary notwithstanding.

46.3 Should the **Contractor** refuse to accept the final payment as tendered by the **Comptroller**, it shall constitute a waiver of any right to interest thereon.

46.4 The **Contractor**, however, shall not be barred by this Article 46 from commencing an action for breach of **Contract** to the extent permitted by **Law** and by the terms of the **Contract** for any claims that are contained in the verified statement filed with the **Contractor's** substantial and final requisitions pursuant to Articles 44 and 45 or that arose after submission of the final payment requisition, provided that a detailed and verified statement of claim is served upon the contracting **Agency** and **Comptroller** not later than forty (40) **Days** after the making of such final payment by electronic funds transfer (EFT) or the mailing of such final payment. The statement shall specify the items upon which the claim will be based and any such claim shall be limited to such items.

ARTICLE 47. APPROVAL BY PUBLIC DESIGN COMMISSION

47.1 All works of art, including paintings, mural decorations, stained glass, statues, bas-reliefs, and other sculptures, monuments, fountains, arches, and other structures of a permanent character intended for ornament or commemoration, and every design of the same to be used in the performance of this **Contract**, and the design of all bridges, approaches, buildings, gates, fences, lamps, or structures to be erected, pursuant to the terms of this **Contract**, shall be submitted to the Art Commission, d/b/a the Public Design Commission of the City of New York, and shall be approved by the Public Design Commission prior to the erection or placing in position of the same. The final payment shall not become due or payable under this **Contract** unless and until the Public Design Commission shall certify that the design for the **Work** herein contracted for has been approved by the said Public Design Commission, and that the same has been executed in substantial accordance with the design so approved, pursuant to the provisions of Chapter 37, Section 854 of the **City** Charter, as amended.

CHAPTER X: CONTRACTOR'S DEFAULT

ARTICLE 48. COMMISSIONER'S RIGHT TO DECLARE CONTRACTOR IN DEFAULT

48.1 In addition to those instances specifically referred to in other Articles herein, the **Commissioner** shall have the right to declare the **Contractor** in default of this **Contract** if:

48.1.1 The **Contractor** fails to commence **Work** when notified to do so by the **Commissioner**; or if

48.1.2 The **Contractor** shall abandon the **Work**; or if

48.1.3 The **Contractor** shall refuse to proceed with the **Work** when and as directed by the **Commissioner**; or if

48.1.4 The **Contractor** shall, without just cause, reduce its working force to a number which, if maintained, would be insufficient, in the opinion of the **Commissioner**, to complete the **Work** in accordance with the progress schedule; or if

48.1.5 The **Contractor** shall fail or refuse to increase sufficiently such working force when ordered to do so by the **Commissioner**; or if

48.1.6 The **Contractor** shall sublet, assign, transfer, convert or otherwise dispose of this **Contract** other than as herein specified; or sell or assign a majority interest in the **Contractor**; or if

48.1.7 The **Contractor** fails to secure and maintain all required insurance; or if

48.1.8 A receiver or receivers are appointed to take charge of the **Contractor's** property or affairs; or if

48.1.9 The **Commissioner** shall be of the opinion that the **Contractor** is or has been unnecessarily or unreasonably or willfully delaying the performance and completion of the **Work**, or the award of necessary subcontracts, or the placing of necessary material and equipment orders; or if

48.1.10 The **Commissioner** shall be of the opinion that the **Contractor** is or has been willfully or in bad faith violating any of the provisions of this **Contract**; or if

48.1.11 The **Commissioner** shall be of the opinion that the **Work** cannot be completed within the time herein provided therefor or within the time to which such completion may have been extended; provided, however, that the impossibility of timely completion is, in the **Commissioner's** opinion, attributable to conditions within the **Contractor's** control; or if

48.1.12 The **Work** is not completed within the time herein provided therefor or within the time to which the **Contractor** may be entitled to have such completion extended; or if

48.1.13 Any statement or representation of the **Contractor** in the **Contract** or in any document submitted by the **Contractor** with respect to the **Work**, the **Project**, or the **Contract** (or for purposes of securing the **Contract**) was untrue or incorrect when made; or if

48.1.14 The **Contractor** or any of its officers, directors, partners, five (5%) percent shareholders, principals, or other persons substantially involved in its activities, commits any of the acts or omissions specified as the grounds for debarment in the **PPB** Rules.

48.2 Before the **Commissioner** shall exercise his/her right to declare the **Contractor** in default, the **Commissioner** shall give the **Contractor** an opportunity to be heard, upon not less than two (2) **Days**' notice.

ARTICLE 49. EXERCISE OF THE RIGHT TO DECLARE DEFAULT

49.1 The right to declare the **Contractor** in default for any of the grounds specified or referred to in Article 48 shall be exercised by sending the **Contractor** a notice, signed by the **Commissioner**, setting forth the ground or grounds upon which such default is declared (hereinafter referred to as a "Notice of Default").

49.2 The **Commissioner's** determination that the **Contractor** is in default shall be conclusive, final, and binding on the parties and such a finding shall preclude the **Contractor** from commencing a plenary action for any damages relating to the **Contract**. If the **Contractor** protests the determination of the **Commissioner**, the **Contractor** may commence an action in a court of competent jurisdiction of the State of New York under Article 78 of the New York Civil Practice Law and Rules.

ARTICLE 50. QUITTING THE SITE

50.1 Upon receipt of such notice the **Contractor** shall immediately discontinue all further operations under this **Contract** and shall immediately quit the **Site**, leaving untouched all plant, materials, equipment, tools, and supplies then on the **Site**.

ARTICLE 51. COMPLETION OF THE WORK

51.1 The **Commissioner**, after declaring the **Contractor** in default, may then have the **Work** completed by such means and in such manner, by contract with or without public letting, or otherwise, as he/she may deem advisable, utilizing for such purpose such of the **Contractor's** plant, materials, equipment, tools, and supplies remaining on the **Site**, and also such **Subcontractors**, as he/she may deem advisable.

51.2 After such completion, the **Commissioner** shall make a certificate stating the expense incurred in such completion, which shall include the cost of re-letting and also the total amount of liquidated damages (at the rate provided for in the **Contract**) from the date when the **Work** should have been completed by the **Contractor** in accordance with the terms hereof to the date of actual completion of the **Work**. Such certificate shall be binding and conclusive upon the **Contractor**, its sureties, and any person claiming under the **Contractor**, as to the amount thereof.

51.3 The expense of such completion, including any and all related and incidental costs, as so certified by the **Commissioner**, and any liquidated damages assessed against the **Contractor**, shall be charged against and deducted out of monies which are earned by the **Contractor** prior to the date of default. Should the expense of such completion, as certified by the **Commissioner**, exceed the total sum which would have been payable under the **Contract** if it had been completed by the **Contractor**, any excess shall be paid by the **Contractor**.

ARTICLE 52. PARTIAL DEFAULT

52.1 In case the **Commissioner** shall declare the **Contractor** in default as to a part of the **Work** only, the **Contractor** shall discontinue such part, shall continue performing the remainder of the **Work** in strict conformity with the terms of this **Contract**, and shall in no way hinder or interfere with any **Other Contractor(s)** or persons whom the **Commissioner** may engage to complete the **Work** as to which the **Contractor** was declared in default.

52.2 The provisions of this Chapter relating to declaring the **Contractor** in default as to the entire **Work** shall be equally applicable to a declaration of partial default, except that the **Commissioner** shall be entitled to utilize for completion of the part of the **Work** as to which the **Contractor** was declared in default only such plant, materials, equipment, tools, and supplies as had been previously used by the **Contractor** on such part.

ARTICLE 53. PERFORMANCE OF UNCOMPLETED WORK

53.1 In completing the whole or any part of the **Work** under the provisions of this Chapter X, the **Commissioner** shall have the power to depart from or change or vary the terms and provisions of this **Contract**, provided, however, that such departure, change or variation is made for the purpose of reducing the time or expense of such completion. Such departure, change or variation, even to the extent of accepting a lesser or different performance, shall not affect the conclusiveness of the **Commissioner's** certificate of the cost of completion referred to in Article 51, nor shall it constitute a defense to an action to recover the amount by which such certificate exceeds the amount which would have been payable to the **Contractor** hereunder but for its default.

ARTICLE 54. OTHER REMEDIES

54.1 In addition to the right to declare the **Contractor** in default pursuant to this Chapter X, the **Commissioner** shall have the absolute right, in his/her sole discretion and without a hearing, to complete or cause to be completed in the same manner as described in Articles 51 and 53, any or all unsatisfactory or uncompleted punch list **Work** that remains after the completion date specified in the **Final Approved Punch List**. A written notice of the exercise of this right shall be sent to the **Contractor** who shall immediately quit the **Site** in accordance with the provisions of Article 50.

54.2 The expense of completion permitted under Article 54.1, including any and all related and incidental costs, as so certified by the **Commissioner**, shall be charged against and deducted out of monies which have been earned by the **Contractor** prior to the date of the exercise of the right set forth in Article 54.1; the balance of such monies, if any, subject to the other provisions of this **Contract**, to be paid to the **Contractor** without interest after such completion. Should the expense of such completion, as certified by the **Commissioner**, exceed the total sum which would have been payable under the **Contract** if it had been completed by the **Contractor**, any excess shall be paid by the **Contractor**.

54.3 The previous provisions of this Chapter X shall be in addition to any and all other remedies available under **Law** or in equity.

54.4 The exercise by the **City** of any remedy set forth herein shall not be deemed a waiver by the **City** of any other legal or equitable remedy contained in this **Contract** or provided under **Law**.

CHAPTER XI: MISCELLANEOUS PROVISIONS

ARTICLE 55. CONTRACTOR'S WARRANTIES

55.1 In consideration of, and to induce, the award of this **Contract** to the **Contractor**, the **Contractor** represents and warrants:

55.1.1 That it is financially solvent, sufficiently experienced and competent to perform the **Work**; and

55.1.2 That the facts stated in its bid and the information given by it pursuant to the Information for Bidders is true and correct in all respects; and

55.1.3 That it has read and complied with all requirements set forth in the **Contract**.

ARTICLE 56. CLAIMS AND ACTIONS THEREON

56.1 Any claim, that is not subject to dispute resolution under the **PPB** Rules or this **Contract**, against the **City** for damages for breach of **Contract** shall not be made or asserted in any action, unless the **Contractor** shall have strictly complied with all requirements relating to the giving of notice and of information with respect to such claims, as herein before provided.

56.2 Nor shall any action be instituted or maintained on any such claims unless such action is commenced within six (6) months after **Substantial Completion**; except that:

56.2.1 Any claims arising out of events occurring after **Substantial Completion** and before **Final Acceptance** of the **Work** shall be asserted within six (6) months of **Final Acceptance** of the **Work**;

56.2.2 If the **Commissioner** exercises his/her right to complete or cause to complete any or all unsatisfactory or uncompleted punch list **Work** that remains after the completion date specified in the **Final Approved Punch List** pursuant to Article 54, any such action shall be commenced within six (6) months from the date the **Commissioner** notifies the **Contractor** in writing that he/she has exercised such right. Any claims for monies deducted, retained or withheld under the provisions of this **Contract** shall be asserted within six (6) months after the date when such monies otherwise become due and payable hereunder; and

56.2.3 If the **Commissioner** exercises his/her right to terminate the **Contract** pursuant to Article 64, any such action shall be commenced within six (6) months of the date the **Commissioner** exercises said right.

ARTICLE 57. INFRINGEMENT

57.1 The **Contractor** shall be solely responsible for and shall defend, indemnify, and hold the **City** harmless from any and all claims (even if the allegations of the lawsuit are without merit) and judgments for damages and from costs and expenses to which the **City** may be subject to or which it may suffer or incur allegedly arising out of or in connection with any infringement by the **Contractor** of any copyright, trade secrets, trademark or patent rights or any other property or personal right of any third party by the **Contractor** and/or its **Subcontractors** in the performance or completion of the **Work**. Insofar as the facts or **Law** relating to any claim would preclude the **City** from being completely indemnified by the **Contractor**, the **City** shall be partially indemnified by the **Contractor** to the fullest extent permitted by **Law**.

ARTICLE 58. NO CLAIM AGAINST OFFICIALS, AGENTS OR EMPLOYEES

58.1 No claim whatsoever shall be made by the **Contractor** against any official, agent or employee of the **City** for, or on account of, anything done or omitted to be done in connection with this **Contract**.

ARTICLE 59. SERVICE OF NOTICES

59.1 The **Contractor** hereby designates the business address, fax number, and email address specified in its bid, as the place where all notices, directions or other communications to the **Contractor** may be delivered, or to which they may be mailed. Any notice, direction, or communication from either party to the other shall be in writing and shall be deemed to have been given when (i) delivered personally; (ii) sent by certified mail, return receipt requested; (iii) delivered by overnight or same day courier service in a properly addressed envelope with confirmation; or (iv) sent by fax or email and, unless receipt of the fax or e-mail is acknowledged by the recipient by fax or e-mail, deposited in a post office box regularly maintained by the United States Postal Service in a properly addressed, postage pre-paid envelope.

59.2 **Contractor's** notice address, email address, or fax number may be changed at any time by an instrument in writing, executed and acknowledged by the **Contractor**, and delivered to the **Commissioner**.

59.3 Nothing herein contained shall, however, be deemed to preclude or render inoperative the service of any notice, direction or other communication upon the **Contractor** personally, or, if the **Contractor** is a corporation, upon any officer thereof.

ARTICLE 60. UNLAWFUL PROVISIONS DEEMED STRICKEN FROM CONTRACT

60.1 If this **Contract** contains any unlawful provision not an essential part of the **Contract** and which shall not appear to have been a controlling or material inducement to the making thereof, the same shall be deemed of no effect and shall, upon notice by either party, be deemed stricken from the **Contract** without affecting the binding force of the remainder.

ARTICLE 61. ALL LEGAL PROVISIONS DEEMED INCLUDED

61.1 It is the intent and understanding of the parties to this **Contract** that each and every provision of **Law** required to be inserted in this **Contract** shall be and is inserted herein. Furthermore, it is hereby stipulated that every such provision is to be deemed to be inserted herein, and if, through mistake or otherwise, any such provision is not inserted, or is not inserted in correct form, then this **Contract** shall forthwith upon the application of either party be amended by such insertion so as to comply strictly with the **Law** and without prejudice to the rights of either party hereunder.

ARTICLE 62. TAX EXEMPTION

62.1 The **City** is exempt from payment of Federal, State, and local taxes, including sales and compensating use taxes of the State of New York and its cities and counties on all tangible personal property sold to the **City** pursuant to the provisions of this **Contract**. These taxes are not to be included in bids. However, this exemption does not apply to tools, machinery, equipment or other property leased by or to the **Contractor**, **Subcontractor** or **Materialman** or to tangible personal property which, even

though it is consumed, is not incorporated into the completed **Work** (consumable supplies) and tangible personal property that the **Contractor** is required to remove from the **Site** during or upon completion of the **Work**. The **Contractor** and its **Subcontractors** and **Materialmen** shall be responsible for and pay any and all applicable taxes, including sales and compensating use taxes, on such leased tools, machinery, equipment or other property and upon all such consumable supplies and tangible personal property that the **Contractor** is required to remove from the **Site** during or upon completion of the **Work**.

62.2 The **Contractor** agrees to sell and the **City** agrees to purchase all tangible personal property, other than consumable supplies and other tangible personal property that the **Contractor** is required to remove from the **Site** during or upon completion of the **Work**, that is required, necessary or proper for or incidental to the construction of the **Project** covered by this **Contract**. The sum paid under this **Contract** for such tangible personal property shall be in full payment and consideration for the sale of such tangible personal property.

62.2.1 The **Contractor** agrees to construct the **Project** and to perform all **Work**, labor and services rendered, necessary, proper or incidental thereto for the sum shown in the bid for the performance of such **Work**, labor, and services, and the sum so paid pursuant to this **Contract** for such **Work**, labor, and services, shall be in full consideration for the performance by the **Contractor** of all its duties and obligations under this **Contract** in connection with said **Work,** labor, and services.

62.3 20 NYCRR Section 541.3(d) provides that a **Contractor**'s purchases of tangible personal property that is either incorporated into real property owned by a governmental entity or purchased for and sold to a governmental entity are exempt from sales and use tax. The **City** shall not pay sales tax for any such tangible personal property that it purchases from the **Contractor** pursuant to the **Contract.** With respect to such tangible personal property, the **Contractor**, at the request of the **City**, shall furnish to the **City** such bills of sale and other instruments as may be required by the **City**, properly executed, acknowledged and delivered assuring to the **City** title to such tangible personal property, free of liens and/or encumbrances, and the **Contractor** shall mark or otherwise identify all such tangible personal property as the property of the **City**.

62.4 Title to all tangible personal property to be sold by the **Contractor** to the **City** pursuant to the provisions of the **Contract** shall immediately vest in and become the sole property of the **City** upon delivery of such tangible personal property to the **Site**. Notwithstanding such transfer of title, the **Contractor** shall have the full and continuing responsibility to install such tangible personal property in accordance with the provisions of this **Contract**, protect it, maintain it in a proper condition and forthwith repair, replace and make good any damage thereto, theft or disappearance thereof, and furnish additional tangible personal property in place of any that may be lost, stolen or rendered unusable, without cost to the **City**, until such time as the **Work** covered by the **Contract** is fully accepted by the **City**. Such transfer of title shall in no way affect any of the **Contractor's** obligations hereunder. In the event that, after title has passed to the **City**, any of the tangible personal property is rejected as being defective or otherwise unsatisfactory, title to all such tangible personal property shall be deemed to have been transferred back to the **Contractor**.

62.5 The purchase by **Subcontractors** or **Materialmen** of tangible personal property to be sold hereunder shall be a purchase or procurement for resale to the **Contractor** (either directly or through other **Subcontractors**) and therefore not subject to the aforesaid sales and compensating use taxes, provided that the subcontracts and purchase agreements provide for the resale of such tangible personal property and that such subcontracts and purchase agreements are in a form similar to this **Contract** with respect to the separation of the sale of consumable supplies and tangible personal property that the

Contractor is required to remove from the **Site** during or upon completion of the **Work** from the **Work** and labor, services, and any other matters to be provided, and provided further that the subcontracts and purchase agreements provide separate prices for tangible personal property and all other services and matters. Such separation shall actually be followed in practice, including the separation of payments for tangible personal property from the payments for other **Work** and labor and other things to be provided.

62.6 The **Contractor** and its **Subcontractors** and **Materialmen** shall furnish a **Contractor** Exempt Purchase Certificate to all persons, firms or corporations from which they purchase tangible personal property for the performance of the **Work** covered by this **Contract**.

62.7 In the event any of the provisions of this Article 62 shall be deemed to be in conflict with any other provisions of this **Contract** or create any ambiguity, then the provisions of this Article 62 shall control.

ARTICLE 63. INVESTIGATION(S) CLAUSE

63.1 The parties to this **Contract** agree to cooperate fully and faithfully with any investigation, audit or inquiry conducted by a United States, a State of New York (State) or a **City** governmental agency or authority that is empowered directly or by designation to compel the attendance of witnesses and to examine witnesses under oath, or conducted by the Inspector General of a governmental agency that is a party in interest to the transaction, submitted bid, submitted proposal, contract, lease, permit or license that is the subject of the investigation, audit or inquiry.

63.2 If any person who has been advised that his/her statement, and any information from such statement, will not be used against him/her in any subsequent criminal proceeding refuses to testify before a grand jury or other governmental agency or authority empowered directly or by designation to compel the attendance of witnesses and to examine witnesses under oath concerning the award of or performance under any transaction, agreement, lease, permit, contract, or license entered into with the **City**, the State, or any political subdivision or public authority thereof, or the Port Authority of New York and New Jersey, or any local development corporation within the **City**, or any public benefit corporation organized under the **Laws** of the State of New York, or;

63.3 If any person refuses to testify for a reason other than the assertion of his/her privilege against self incrimination in an investigation, audit or inquiry conducted by a **City** or State governmental agency or authority empowered directly or by designation to compel the attendance of witnesses and to take testimony under oath, or by the Inspector General of the governmental agency that is a party in interest in, and is seeking testimony concerning the award of, or performance under any transaction, agreement, lease, permit, contract, or license entered into with the **City**, the State, or any political subdivision thereof or any local development corporation within the **City**, then;

63.4 The **Commissioner** whose **Agency** is a party in interest to the transaction, submitted bid, submitted proposal, contract, lease, permit, or license shall convene a hearing, upon not less than five (5) **Days**' written notice to the parties involved to determine if any penalties should attach for the failure of a person to testify.

63.5 If any non-governmental party to the hearing requests an adjournment, the **Commissioner** who convened the hearing may, upon granting the adjournment, suspend any contract, lease, permit, or license, pending the final determination pursuant to Article 63.7 without the **City** incurring any penalty or damages for delay or otherwise.

63.6 The penalties which may attach after a final determination by the **Commissioner** may include but shall not exceed:

63.6.1 The disqualification for a period not to exceed five (5) years from the date of an adverse determination for any person, or any entity of which such person was a member at the time the testimony was sought, from submitting bids for, or transacting business with, or entering into or obtaining any contract, lease, permit or license with or from the **City**; and/or

63.6.2 The cancellation or termination of any and all such existing **City** contracts, leases, permits or licenses that the refusal to testify concerns and that have not been assigned as permitted under this **Contract**, nor the proceeds of which pledged, to an unaffiliated and unrelated institutional lender for fair value prior to the issuance of the notice scheduling the hearing, without the **City** incurring any penalty or damages on account of such cancellation or termination; monies lawfully due for goods delivered, work done, rentals, or fees accrued prior to the cancellation or termination shall be paid by the **City**.

63.7 The **Commissioner** shall consider and address in reaching his/her determination and in assessing an appropriate penalty the factors in Articles 63.7.1 and 63.7.2. The **Commissioner** may also consider, if relevant and appropriate, the criteria established in Articles 63.7.3 and 63.7.4, in addition to any other information which may be relevant and appropriate:

63.7.1 The party's good faith endeavors or lack thereof to cooperate fully and faithfully with any governmental investigation or audit, including but not limited to the discipline, discharge, or disassociation of any person failing to testify, the production of accurate and complete books and records, and the forthcoming testimony of all other members, agents, assignees or fiduciaries whose testimony is sought.

63.7.2 The relationship of the person who refused to testify to any entity that is a party to the hearing, including but not limited to, whether the person whose testimony is sought has an ownership interest in the entity and/or the degree of authority and responsibility the person has within the entity.

63.7.3 The nexus of the testimony sought to the subject entity and its contracts, leases, permits or licenses with the **City**.

63.7.4 The effect a penalty may have on an unaffiliated and unrelated party or entity that has a significant interest in an entity subject to penalties under Article 63.6, provided that the party or entity has given actual notice to the **Commissioner** upon the acquisition of the interest, or at the hearing called for in Article 63.4, gives notice and proves that such interest was previously acquired. Under either circumstance the party or entity shall present evidence at the hearing demonstrating the potential adverse impact a penalty will have on such person or entity.

63.8 Definitions:

63.8.1 The term "license" or "permit" as used in this Article 63 shall be defined as a license, permit, franchise or concession not granted as a matter of right.

63.8.2 The term "person" as used in this Article 63 shall be defined as any natural person doing business alone or associated with another person or entity as a partner, director, officer, principal or employee.

63.8.3 The term "entity" as used in this Article 63 shall be defined as any firm, partnership, corporation, association, joint venture, or person that receives monies, benefits, licenses, leases, or permits from or through the **City** or otherwise transacts business with the **City**.

63.8.4 The term "member" as used in this Article 63 shall be defined as any person associated with another person or entity as a partner, director, officer, principal or employee.

63.9 In addition to and notwithstanding any other provision of this **Contract**, the **Commissioner** may in his/her sole discretion terminate this **Contract** upon not less than three (3) **Days'** written notice in the event the **Contractor** fails to promptly report in writing to the **Commissioner** of the Department of Investigations ("DOI") of the **City** any solicitation of money, goods, requests for future employment or other benefit or thing of value, by or on behalf of any employee of the **City** or other person, firm, corporation or entity for any purpose which may be related to the procurement or obtaining of this **Contract** by the **Contractor**, or affecting the performance of this **Contract**.

ARTICLE 64. TERMINATION BY THE CITY

64.1 In addition to termination pursuant to any other article of this **Contract**, the **Commissioner** may, at any time, terminate this **Contract** by written notice to the **Contractor**. In the event of termination, the **Contractor** shall, upon receipt of such notice, unless otherwise directed by the **Commissioner**:

64.1.1 Stop **Work** on the date specified in the notice;

64.1.2 Take such action as may be necessary for the protection and preservation of the **City's** materials and property;

64.1.3 Cancel all cancelable orders for material and equipment;

64.1.4 Assign to the **City** and deliver to the **Site** or another location designated by the **Commissioner**, any non-cancelable orders for material and equipment that is not capable of use except in the performance of this **Contract** and has been specifically fabricated for the sole purpose of this **Contract** and not incorporated in the **Work**;

64.1.5 Take no action which will increase the amounts payable by the **City** under this **Contract**.

64.2 In the event of termination by the **City** pursuant to this Article 64, payment to the **Contractor** shall be in accordance with Articles 64.2.1, 64.2.2 or 64.2.3, to the extent that each respective article applies.

64.2.1 Lump Sum Contracts or Items: On all lump sum **Contracts**, or on lump sum items in a **Contract**, the **City** will pay the **Contractor** the sum of the amounts described in Articles 64.2.1(a) and 64.2.1(b), less all payments previously made pursuant to this **Contract**. On lump sum **Contracts** only, the **City** will also pay the **Contractor** an additional sum as provided in Article 64.2.1(c).

64.2.1(a) For **Work** completed prior to the notice of termination, the **Contractor** shall be paid a pro rata portion of the lump sum bid amount, plus approved change orders, based upon the percent completion of the **Work**, as determined by the

Commissioner. For the purpose of determining the pro rata portion of the lump sum bid amount to which the **Contractor** is entitled, the bid breakdown submitted in accordance with Article 41 shall be considered, but shall not be dispositive. The **Commissioner's** determination hereunder shall be final, binding, and conclusive.

64.2.1(b) For non-cancelable material and equipment that is not capable of use except in the performance of this **Contract** and has been specifically fabricated for the sole purpose of this **Contract**, but not yet incorporated in the **Work**, the **Contractor** shall be paid the lesser of the following, less salvage value:

64.2.1(b)(i) The Direct Cost, as defined in Article 64.2.4; or

64.2.1(b)(ii) The fair and reasonable value, if less than Direct Cost, of such material and equipment, plus necessary and reasonable delivery costs.

64.2.1(b)(iii) In addition, the **Contractor** shall be paid five (5%) percent of the amount described in Article 64.2.1(b)(i) or Article 64.2.1(b)(ii), whichever applies.

64.2.1(c) Except as otherwise provided in Article 64.2.1(d), on all lump sum **Contracts**, the **Contractor** shall be paid the percentage indicated below applied to the difference between the total lump sum bid amount and the total of all payments made prior to the notice of termination plus all payments allowed pursuant to Articles 64.2.1(a) and 64.2.1(b):

64.2.1(c)(i) Five (5%) percent of the first five million ($5,000,000) dollars; and

64.2.1(c)(ii) Three (3%) percent of any amount between five million ($5,000,000) dollars and fifteen million ($15,000,000) dollars; plus

64.2.1(c)(iii) One (1%) percent of any amount over fifteen million ($15,000,000) dollars.

64.2.1(d) In the event the **City** terminates a lump sum **Contract** pursuant to this Article 64 within ninety (90) **Days** after registration of the **Contract** with the **Comptroller**, the **Contractor** shall be paid one (1%) percent of the difference between the lump sum bid amount and the total of all payments made pursuant to this Article 64.2.

64.2.2 Unit Price Contracts or Items: On all unit price **Contracts**, or on unit price items in a **Contract**, the **City** will pay the **Contractor** the sum of the amounts described in Articles 64.2.2(a) and 64.2.2(b), less all payments previously made pursuant to this **Contract**:

64.2.2(a) For all completed units, the unit price stated in the **Contract**, and

64.2.2(b) For units that have been ordered but are only partially completed, the **Contractor** will be paid:

64.2.2(b)(i) A pro rata portion of the unit price stated in the **Contract** based upon the percent completion of the unit and

64.2.2(b)(ii) For non-cancelable material and equipment, payment will be made pursuant to Article 64.2.1(b).

64.2.3 Time and Materials Contracts or Items Based on Time and Material Records: On all **Contracts** or items in a **Contract** where payment for the **Work** is based on time and material records, the **Contractor** shall be paid in accordance with Article 26, less all payments previously made pursuant to this **Contract**.

64.2.4 Direct Costs: Direct Costs as used in this Article 64.2 shall mean:

64.2.4(a) The actual purchase price of material and equipment, plus necessary and reasonable delivery costs,

64.2.4(b) The actual cost of labor involved in construction and installation at the **Site**, and

64.2.4(c) The actual cost of necessary bonds and insurance purchased pursuant to requirements of this **Contract** less any amounts that have been or should be refunded by the **Contractor's** sureties or insurance carriers.

64.2.4(d) Direct Costs shall not include overhead.

64.3 In no event shall any payments under this Article 64 exceed the **Contract** price for such items.

64.4 All payments pursuant to Article 64 shall be in the nature of liquidated damages and shall be accepted by the **Contractor** in full satisfaction of all claims against the **City**.

64.5 The **City** may deduct or set off against any sums due and payable pursuant to this Article 64, any deductions authorized by this **Contract** or by **Law** (including but not limited to liquidated damages) and any claims it may have against the **Contractor**. The **City's** exercise of the right to terminate the **Contract** pursuant to this Article 64 shall not impair or otherwise effect the **City's** right to assert any claims it may have against the **Contractor** in a plenary action.

64.6 Where the **Work** covered by the **Contract** has been substantially completed, as determined in writing by the **Commissioner**, termination of the **Work** shall be handled as an omission of **Work** pursuant to Articles 29 and 33, in which case a change order will be issued to reflect an appropriate reduction in the **Contract** sum, or if the amount is determined after final payment, such amount shall be paid by the **Contractor**.

ARTICLE 65. CHOICE OF LAW, CONSENT TO JURISDICTION AND VENUE

65.1 This **Contract** shall be deemed to be executed in the **City** regardless of the domicile of the **Contractor**, and shall be governed by and construed in accordance with the **Laws** of the State of New York and the **Laws** of the United States, where applicable.

65.2 The parties agree that any and all claims asserted against the **City** arising under this **Contract** or related thereto shall be heard and determined in the courts of the State of New York ("New York State Courts") located in the **City** and County of New York. To effect this **Contract** and intent, the **Contractor** agrees:

65.2.1 If the **City** initiates any action against the **Contractor** in Federal court or in a New York State Court, service of process may be made on the **Contractor** either in person, wherever such **Contractor** may be found, or by registered mail addressed to the **Contractor** at its address as set forth in this **Contract**, or to such other address as the **Contractor** may provide to the **City** in writing; and

65.2.2 With respect to any action between the **City** and the **Contractor** in a New York State Court, the **Contractor** hereby expressly waives and relinquishes any rights it might otherwise have:

65.2.2(a) To move to dismiss on grounds of forum non conveniens;

65.2.2(b) To remove to Federal Court; and

65.2.2(c) To move for a change of venue to a New York State Court outside New York County.

65.2.3 With respect to any action brought by the **City** against the **Contractor** in a Federal Court located in the **City**, the **Contractor** expressly waives and relinquishes any right it might otherwise have to move to transfer the action to a Federal Court outside the **City**.

65.2.4 If the **Contractor** commences any action against the **City** in a court located other than in the **City** and County of New York, upon request of the **City**, the **Contractor** shall either consent to a transfer of the action to a New York State Court of competent jurisdiction located in the **City** and County of New York or, if the Court where the action is initially brought will not or cannot transfer the action, the **Contractor** shall consent to dismiss such action without prejudice and may thereafter reinstate the action in a New York State Court of competent jurisdiction in New York County.

65.3 If any provision(s) of this Article 65 is held unenforceable for any reason, each and all other provision(s) shall nevertheless remain in full force and effect.

ARTICLE 66. PARTICIPATION IN AN INTERNATIONAL BOYCOTT

66.1 The **Contractor** agrees that neither the **Contractor** nor any substantially owned affiliated company is participating or shall participate in an international boycott in violation of the provisions of the Federal Export Administration Act of 1979, as amended, or the regulations of the United States Department of Commerce (Commerce Department) promulgated thereunder.

66.2 Upon the final determination by the Commerce Department or any other agency of the United States as to, or conviction of the **Contractor** or a substantially-owned affiliated company thereof for participation in an international boycott in violation of the provisions of the Export Administration Act of 1979, as amended, or the regulations promulgated thereunder, the **Comptroller** may, at his/her option, render forfeit and void this **Contract**.

66.3 The **Contractor** shall comply in all respects, with the provisions of Section 6-114 of the Administrative Code and the rules and regulations issued by the **Comptroller** thereunder.

ARTICLE 67. LOCALLY BASED ENTERPRISE PROGRAM

67.1 This **Contract** is subject to the requirements of Section 6-108.1 of the Administrative Code and regulations promulgated thereunder. No construction contract shall be awarded unless and until these requirements have been complied with in their entirety; however, compliance with this Article 67 is not required if the Agency sets Subcontractor Participation Goals for Minority- and Women-Owned Business Enterprises (M/WBEs).

67.2 Unless specifically waived by the **Commissioner** with the approval of the Division of Economic and Financial Opportunity of the **City** Department of Business Services, if any portion of the **Contract** is subcontracted, not less than ten (10%) percent of the total dollar amount of the **Contract** shall be awarded to locally based enterprises (LBEs); except that where less than ten (10%) percent of the total dollar amount of the **Contract** is subcontracted, such lesser percentage shall be so awarded.

67.3 The **Contractor** shall not require performance and payment bonds from LBE **Subcontractors**.

67.4 If the **Contractor** has indicated prior to award that no **Work** will be subcontracted, no **Work** shall be subcontracted without the prior approval of the **Commissioner**, which shall be granted only if the **Contractor** makes a good faith effort beginning at least six (6) weeks before the **Work** is to be performed to obtain LBE **Subcontractors** to perform the **Work**.

67.5 If the **Contractor** has not identified sufficient LBE **Subcontractors** prior to award, it shall sign a letter of compliance stating that it complies with Section 6-108.1 of the Administrative Code, recognizes that achieving the LBE requirement is a condition of its **Contract**, and shall submit documentation demonstrating its good faith efforts to obtain LBEs. After award, the **Contractor** shall begin to solicit LBE's to perform subcontracted **Work** at least six (6) weeks before the date such **Work** is to be performed and shall demonstrate that a good faith effort has been made to obtain LBEs on each subcontract until it meets the required percentage.

67.6 Failure of the **Contractor** to comply with the requirements of Section 6-108.1 of the Administrative Code and the regulations promulgated thereunder shall constitute a material breach of this **Contract**. Remedy for such breach may include the imposition of any or all of the following sanctions:

67.6.1 Reducing the **Contractor's** compensation by an amount equal to the dollar value of the percentage of the LBE subcontracting requirement not complied with;

67.6.2 Declaring the **Contractor** in default;

67.6.3 If the **Contractor** is an LBE, de-certifying and declaring the **Contractor** ineligible to participate in the LBE program for a period of up to three (3) years.

ARTICLE 68. ANTITRUST

68.1 The **Contractor** hereby assigns, sells, and transfers to the **City** all right, title, and interest in and to any claims and causes of action arising under the antitrust **Laws** of New York State or of the United States relating to the particular goods or services purchased or procured by the **City** under this **Contract**.

ARTICLE 69. MacBRIDE PRINCIPLES PROVISIONS

69.1 Notice To All Prospective **Contractors**:

69.1.1 Local Law No. 34 of 1991 became effective on September 10, 1991 and added Section 6-115.1 of the Administrative Code. The local **Law** provides for certain restrictions on **City Contracts** to express the opposition of the people of the **City** to employment discrimination practices in Northern Ireland to promote freedom of work-place opportunity.

69.1.2 Pursuant to Section 6-115.1, prospective **Contractors** for **Contracts** to provide goods or services involving an expenditure of an amount greater than ten thousand ($10,000.) dollars, or for construction involving an amount greater than fifteen thousand ($15,000.) dollars, are asked to sign a rider in which they covenant and represent, as a material condition of their **Contract**, that any business operations in Northern Ireland conducted by the **Contractor** and any individual or legal entity in which the **Contractor** holds a ten (10%) percent or greater ownership interest in the **Contractor** will be conducted in accordance with the MacBride Principles of nondiscrimination in employment.

69.1.3 Prospective **Contractors** are not required to agree to these conditions. However, in the case of **Contracts** let by competitive sealed bidding, whenever the lowest responsible bidder has not agreed to stipulate to the conditions set forth in this notice and another bidder who has agreed to stipulate to such conditions has submitted a bid within five (5%) percent of the lowest responsible bid for a **Contract** to supply goods, services or contraction of comparable quality, the **Agency** shall refer such bids to the Mayor, the Speaker or other officials, as appropriate, who may determine, in accordance with applicable **Law**, that it is in the best interest of the **City** that the **Contract** be awarded to other than the lowest responsible pursuant to Section 313(b)(2) of the **City** Charter.

69.1.4 In the case of **Contracts** let by other than competitive sealed bidding, if a prospective **Contractor** does not agree to these conditions, no **Agency**, elected official or the **City** Council shall award the **Contract** to that bidder unless the **Agency** seeking to use the goods, services or construction certifies in writing that the **Contract** is necessary for the **Agency** to perform its functions and there is no other responsible **Contractor** who will supply goods, services or construction of comparable quality at a comparable price.

69.2 In accordance with Section 6-115.1 of the Administrative Code, the **Contractor** stipulates that such **Contractor** and any individual or legal entity in which the **Contractor** holds a ten (10%) percent or greater ownership interest in the **Contractor** either:

69.2.1 Have no business operations in Northern Ireland, or

69.2.2 Shall take lawful steps in good faith to conduct any business operations they have in Northern Ireland in accordance with the MacBride Principles, and shall permit independent monitoring of their compliance with such principles.

69.3 For purposes of this Article, the following terms shall have the following meanings:

69.3.1 "MacBride Principles" shall mean those principles relating to nondiscrimination in employment and freedom of work-place opportunity which require employers doing business in Northern Ireland to:

69.3.1(a) increase the representation of individuals from under-represented religious groups in the workforce, including managerial, supervisory, administrative, clerical and technical jobs;

69.3.1(b) take steps to promote adequate security for the protection of employees from under-represented religious groups both at the work-place and while traveling to and from **Work**;

69.3.1(c) ban provocative religious or political emblems from the workplace;

69.3.1(d) publicly advertise all job openings and make special recruitment efforts to attract applicants from under-represented religious groups;

69.3.1(e) establish layoff, recall, and termination procedures which do not in practice favor a particular religious group;

69.3.1(f) abolish all job reservations, apprenticeship restrictions and different employment criteria which discriminate on the basis of religion;

69.3.1(g) develop training programs that will prepare substantial numbers of current employees from under-represented religious groups for skilled jobs, including the expansion of existing programs and the creation of new programs to train, upgrade, and improve the skills of workers from under-represented religious groups;

69.3.1(h) establish procedures to asses, identify, and actively recruit employees from under-represented religious groups with potential for further advancement; and

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

69.4 The **Contractor** agrees that the covenants and representations in Article 69.2 are material conditions to this **Contract**. In the event the **Agency** receives information that the **Contractor** who made the stipulation required by this Article 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** either itself or by engaging another **Contractor** or **Contractors**. In the case of a requirement **Contract**, the **Contractor** shall be liable for such difference in price for the entire amount of supplies required by the **Agency** for the uncompleted term of **Contractor's Contract**. In the case of a construction **Contract**, the **Agency** shall also have the right to hold the **Contractor** in partial or total default in accordance with the default provisions of this **Contract**, and/or may seek debarment or suspension of the **Contractor**. The rights and remedies of the **Agency** hereunder shall be in addition to, and not in lieu of, any rights and remedies the **Agency** has pursuant to this **Contract** or by operation of **Law**.

ARTICLE 70. ELECTRONIC FILING/NYC DEVELOPMENT HUB

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

ARTICLE 71. PROHIBITION OF TROPICAL HARDWOODS

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

ARTICLE 72. CONFLICTS OF INTEREST

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

ARTICLE 73. MERGER CLAUSE

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

ARTICLE 74. STATEMENT OF WORK

74.1 The **Contractor** shall furnish all labor and materials and perform all **Work** in strict accordance with the **Specifications** and **Addenda** thereto, numbered as shown in Schedule A.

ARTICLE 75. COMPENSATION TO BE PAID TO CONTRACTOR

75.1 The **City** will pay and the **Contractor** will accept in full consideration for the performance of the **Contract**, subject to additions and deductions as provided herein, the total sum shown in Schedule A, this said sum being the amount at which the **Contract** was awarded to the **Contractor** at a public letting thereof, based upon the **Contractor's** bid for the **Contract**.

ARTICLE 76. ELECTRONIC FUNDS TRANSFER

76.1 In accordance with Section 6-107.1 of the Administrative Code, the **Contractor** agrees to accept payments under this **Contract** from the **City** by electronic funds transfer (EFT). An EFT is any

transfer of funds, other than a transaction originated by check, draft or similar paper instrument, which is initiated through an electronic terminal, telephonic instrument or computer or magnetic tape so as to order, instruct or authorize a financial institution to debit or credit an account. Prior to the first payment made under this **Contract**, the **Contractor** shall designate one financial institution or other authorized payment agent and shall complete the attached "EFT Vendor Payment Enrollment Form" in order to provide the Commissioner of the **City** Department of Finance with information necessary for the **Contractor** to receive electronic funds transfer payments through a designated financial institution or authorized payment agent. The crediting of the amount of a payment to the appropriate account on the books of a financial institution or other authorized payment agent designated by the **Contractor** shall constitute full satisfaction by the **City** for the amount of the payment under this **Contract**. The account information supplied by the **Contractor** to facilitate the electronic funds transfer shall remain confidential to the fullest extent provided by **Law**.

76.2 The **Commissioner** may waive the application of the requirements of this Article 76 to payments on contracts entered into pursuant to Section 315 of the **City** Charter. In addition, the Commissioner of the Department of Finance and the Comptroller may jointly issue standards pursuant to which the **Agency** may waive the requirements of this Article 76 for payments in the following circumstances: (i) for individuals or classes of individuals for whom compliance imposes a hardship; (ii) for classifications or types of checks; or (iii) in other circumstances as may be necessary in the interest of the **City**.

ARTICLE 77. RECORDS RETENTION

77.1 The **Contractor** agrees to retain all books, records, and other documents relevant to this **Contract** for six years after the final payment or termination of this **Contract**, whichever is later. **City**, state, and federal auditors and any other persons duly authorized by the **City** shall have full access to and the right to examine any such books, records, and other documents during the retention period.

ARTICLE 78. EXAMINATION AND VIEWING OF SITE, CONSIDERATION OF OTHER SOURCES OF INFORMATION AND CHANGED SITE CONDITIONS

78.1 Pre-Bidding (Investigation) Viewing of Site – Bidders must carefully view and examine the **Site** of the proposed **Work**, as well as its adjacent area, and seek other usual sources of information, for they will be conclusively presumed to have full knowledge of any and all conditions and hazards on, about or above the **Site** relating to or affecting in any way the performance of the **Work** to be done under the **Contract** that were or should have been known by a reasonably prudent bidder. To arrange a date for visiting the **Site**, bidders are to contact the **Agency** contact person specified in the bid documents.

78.2 Should the **Contractor** encounter during the progress of the Work site conditions or environmental hazards at the **Site** materially differing from any shown on the **Contract Drawings** or indicated in the **Specifications** or such conditions or environmental hazards as could not reasonably have been anticipated by the **Contractor**, which conditions or hazards will materially affect the cost of the **Work** to be done under the **Contract**, the attention of the **Commissioner** must be called immediately to such conditions or hazards before they are disturbed. The **Commissioner** shall thereupon promptly investigate the conditions or hazards. If the **Commissioner** finds that they do so materially differ, and that they could not have been reasonably anticipated by the **Contractor**, the **Contract** may be modified with the **Commissioner**'s written approval.

ARTICLE 79. PARTICIPATION BY MINORITY-OWNED AND WOMEN-OWNED BUSINESS ENTERPRISES IN CITY PROCUREMENT

NOTICE TO ALL PROSPECTIVE CONTRACTORS

ARTICLE I. M/WBE PROGRAM

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

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

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

PART A

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

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

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

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

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

A Contractor that is a qualified joint venture (as defined in Section 6-129(c)(30)) shall be permitted to count a percentage of its own participation toward fulfillment of the relevant **Participation Goal**. In accordance with Section 6-129, the value of Contractor's participation shall be determined by subtracting from the total value of the Contract or Task Order, as applicable, any amounts that Contractor pays to direct subcontractors, and then multiplying the remainder by the percentage to be applied to total profit to determine the amount to which an MBE or WBE is entitled pursuant to the joint venture agreement, provided that where a participant in a joint venture is certified as both an MBE and a WBE, such amount shall be counted either toward the goal for MBEs or the goal for WBEs, but not both.

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

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

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

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

5. Where an **M/WBE** Utilization Plan has been submitted, the Contractor shall, within 30 days of issuance by Agency of a notice to proceed, submit a list of proposed persons or entities to which it intends to award subcontracts within the subsequent 12 months. In the case of multiyear contracts, such list shall also be submitted every year thereafter. The Agency may also require the Contractor to report periodically about the contracts awarded by its direct subcontractors to indirect subcontractors (as defined in Section 6-129(c)(22)). **PLEASE NOTE: If this Contract is a public works project subject to GML §101(5) (i.e., a contract valued at or below $3M for projects in New York City) or if the Contract is subject to a project labor agreement in accordance with Labor Law §222, and the bidder is required to identify at the time of bid submission its intended subcontractors for the Wicks trades (plumbing and gas fitting; steam heating, hot water heating, ventilating and air conditioning (HVAC); and electric wiring), the Contractor must identify all those to which it intends to award construction subcontracts for any portion of the Wicks trade work at the time of bid submission, regardless of what point in the life of the contract such subcontracts will occur. In identifying intended subcontractors in the bid submission, bidders may satisfy any Participation Goals established for this Contract by proposing one or more subcontractors that are MBEs and/or WBEs for any portion of the Wicks trade work**. In the event that the Contractor's selection of a subcontractor is disapproved, the Contractor shall have a reasonable time to propose alternate subcontractors.

6. MBE and WBE firms must be certified by DSBS in order for the Contractor to credit such firms' participation toward the attainment of the **Participation Goals**. Such certification must occur prior to the

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

PART B: MISCELLANEOUS

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

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

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

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

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

ARTICLE II. ENFORCEMENT

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

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

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

(a) entering into an agreement with the Contractor allowing the Contractor to cure the violation;
(b) revoking the Contractor's pre-qualification to bid or make proposals for future contracts;
(c) making a finding that the Contractor is in default of the Contract;
(d) terminating the Contract;
(e) declaring the Contractor to be in breach of Contract;
(f) withholding payment or reimbursement;
(g) determining not to renew the Contract;
(h) assessing actual and consequential damages;
(i) assessing liquidated damages or reducing fees, provided that liquidated damages may be based on amounts representing costs of delays in carrying out the purposes of the M/WBE Program, or in meeting the purposes of the Contract, the costs of meeting utilization goals through additional procurements, the administrative costs of investigation and enforcement, or other factors set forth in the Contract;
(j) exercising rights under the Contract to procure goods, services or construction from another contractor and charge the cost of such contract to the Contractor that has been found to be in noncompliance; or
(k) taking any other appropriate remedy.

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

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

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

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

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 **APS ELECTRIC 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 **85022B0017-E17-0001** .

1. **(Bid) - 12-08-21 BIDS_Form__Electrical_APS.pdf - Jun 27 2022 1:55PM**
2. **(Question answer) - 12-01-2021 E17-001 FORM OF BID BOND.pdf - Jun 27 2022 1:55PM**
3. **(Question answer) - 12-7-21 APS ELECTRIC-QUALIFICATION_FORM E-17.pdf - Jun 27 2022 1:55PM**
4. **Add 3 - E17-0001 Bid Drawings - Jun 27 2022 1:55PM**
5. **Addendum 3 E17-0001 - Jun 27 2022 1:55PM**
6. **BID BREAKDOWN - Jun 27 2022 7:57PM**
7. **Broker's Certification - Jun 28 2022 5:25PM**
8. **Disability Insurance - Jun 28 2022 5:23PM**
9. **E17 - 0001 Addendum 6 - Jun 27 2022 1:55PM**
10. **E17-0001 Addendum 1 - Jun 27 2022 1:55PM**
11. **E17-0001 Addendum 2 - Jun 27 2022 1:55PM**
12. **E17-0001 Addendum 4 (revised) - Jun 27 2022 1:55PM**
13. **E17-0001 Addendum 5 - Jun 27 2022 1:55PM**
14. **E17-0001 Volume 2 - Jun 27 2022 1:55PM**
15. **E17-0001 Volume 3 - Jun 27 2022 1:55PM**
16. **Insurance Certificate - Jun 28 2022 7:53PM**
17. **SCHEDULE B - Jun 27 2022 7:27PM**
18. **Security / Bond - Jun 28 2022 7:47PM**
19. **Volume 1 - Jun 27 2022 1:55PM**
20. **Worker's Compensation - Jun 28 2022 5:22PM**

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: **DEPARTMENT OF DESIGN AND CONSTRUCTION**

DocuSigned by:
Thomas Foley
FE0ABB939FF24B0...
(Signature)

Name: Thomas Foley

Title: Commissioner

Date: 6/30/2022 | 12:49:13 EDT

Contractor
By: **APS ELECTRIC INC**

DocuSigned by:
Mikhail Mikhaylov
A7806FBE55CF46E...

(Signature)

Name: Mikhail Mikhaylov

Title: President

Date: 6/30/2022 | 12:13:42 EDT

ACKNOWLEDGEMENT BY COMMISSIONER

State of _____ County of _____ ss:

On this _____ day of _____, _____, before me personally came _____ to me known, and known to be the Deputy Commissioner of the Department of Design and Construction of The City of New York, the person described as such in and who as such executed the foregoing instrument and acknowledged to me that he executed the same as Deputy Commissioner for the purposes therein mentioned.

_____
Notary Public or Commissioner of Deeds

A U T H O R I T Y

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

APPROPRIATION
COMMISSIONER'S CERTIFICATE

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

_____

_____

Dollars ($ _____)

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

_____

_____

_____
Department of Design and Construction

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

_____
Commissioner

COMPTROLLER'S CERTIFICATE

The City of New York_____

Pursuant to the provisions of Section 6-101 of the Administrative Code of the City of New York, I hereby certify that there remains unapplied and unexpended a balance of the above mentioned fund applicable to this Contract sufficient to pay the estimated expense of executing the same viz:

$_____

_____
Comptroller

MAYOR'S CERTIFICATE OR CERTIFICATE OF THE DIRECTOR OF THE BUDGET

Performance Bond #2 (Pages 104 to 107): Use if the total contract price is more than $5 Million.

PERFORMANCE BOND #2 Bond # 015217683

KNOW ALL PERSONS BY THESE PRESENTS:,

That we, APS Electric, Inc.

hereinafter referred to as the "Principal,"

and, The Ohio Casualty Insurance Company

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

($ 6,977,000.00) 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 Lighting & HVAC Energy Efficiency Upgrades at the Louis J. Lefkowitz Building located at 80 Centre St, New York, NY 10013 - DDC Project #E17-0001

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

NOW, THEREFORE, the conditions of this obligation are such that if the Principal, his or its representatives or assigns, shall well and faithfully perform the said Contract and all modifications, amendments, additions and alterations thereto that may hereafter be made, according to its terms and its true intent and meaning, including repair and or replacement of defective work and guarantees of maintenance for the periods stated in the Contract, and shall fully indemnify and save harmless the City from all cost and damage which it may suffer by reason of the Principal's default of the Contract, and shall fully reimburse and repay the City for all outlay and expense which the City may incur in making

Performance Bond #2 (Pages 104 to 107): Use if the total contract price is more than $5 Million.

good any such default and shall protect the said City of New York against, and pay any and all amounts, damages, cost and judgments which may or shall be recovered against said City or its officers or agents or which the said City of New York may be called upon to pay any person or corporation by reason of any damages arising or growing out of the Principal's default of the Contract, then this obligation shall be null and void, otherwise to remain in full force and effect.

The Surety (Sureties), for value received, hereby stipulates and agrees, upon written notice from the City that the City has determined that the Principal is in default of the Contract, to either (1) pay the full amount of the above penal sum in complete discharge and exoneration of this bond and of all the liabilities of the Surety relating to this bond, or (2) fully perform and complete the Work to be performed under the Contract, pursuant to the terms, conditions, and covenants thereof. The Surety (Sureties) further agrees, at its option, either to tender the penal sum or to commence and diligently perform the Work specified in the Contract, including physical site work, within twenty-five (25) business days after written notice thereof from the City and to complete all Work within the time set forth in the Contract or such other time as agreed to between the City and Surety in accordance with the Contract. The Surety and the City reserve all rights and defenses each may have against the other; provided, however, that the Surety expressly agrees that its reservation of rights shall not provide a basis for non-performance of its obligation to commence and to complete all Work as provided herein.

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

Performance Bond #2 (Pages 104 to 107): Use if the total contract price is more than $5 Million.

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

23rd day of June 20 22.

(Seal)

(L.S.)

APS Electric, Inc. Principal

By: Mikhail Mikhaylov - President

(Seal)

The Ohio Casualty Insurance Company Surety

By:

Scott Adams - Attorney-In-Fact

(Seal)

Surety

By:

(Seal)

Surety

By:

(Seal)

Surety

By:

(Seal)

Surety

By:

Bond Premium Rate 2.5% Sliding Rate.

Bond Premium Cost $61,089.

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

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

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

Performance Bond #2 (Pages 104 to 107): Use if the total contract price is more than $5 Million.

ACKNOWLEDGMENT OF PRINCIPAL IF A CORPORATION

State of New York County of Queens ss:

On this 23rd day of June, 20 22 before me personally came Mikhail Mikhaylov,
to me known, who, being by me duly sworn did depose and say that he resides at 108-21 67th Ave., Forest Hills, NY 11375; that he/she is the President of the corporation described in and which executed the foregoing instrument; that he/she signed his/her name to the foregoing instrument by order of the directors of said corporation as the duly authorized and binding act thereof.

Notary Public or Commissioner of Deeds.

SOFYA DJALALYAN
STATE OF NEW YORK
NOTARY PUBLIC
Qualified in Queens County
01DJ6392961
MY COMMISSION EXPIRES 06-10-2023

ACKNOWLEDGMENT OF PRINCIPAL IF A PARTNERSHIP

State of _____ County of _____ ss:

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

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

_____
Notary Public or Commissioner of Deeds

ACKNOWLEDGMENT OF PRINCIPAL IF AN INDIVIDUAL

State of _____ County of _____ ss:

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

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

_____
Notary Public or Commissioner of Deeds

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

* * * * * * * *

Affix Acknowledgments and Justification of Sureties.

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

PAYMENT BOND Bond # 015217683

KNOW ALL PERSONS BY THESE PRESENTS, That we, APS Electric, Inc.

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

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

Six Million Nine Hundred Seventy Seven Thousand

($ 6,977,000.00) 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 Lighting & HVAC Energy Efficiency Upgrades at the Louis J. Lefkowitz Building located at 80 Centre St, New York, NY 10013 - DDC Project #E17-0001

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

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

(a) Wages and compensation for labor performed and services rendered by all persons engaged in the prosecution of the Work under said Contract, and any amendment or extension thereof or addition thereto, whether such persons be agents servants or employees of the Principal or any such Subcontractor, including all persons so engaged who perform the work of laborers or mechanics at or in the vicinity of the site

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

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

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

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

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

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

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

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

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

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

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

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 23rd day of June, 2022.

(Seal)

_____(L.S.)
APS Electric, Inc. Principal

By: Mikhail Mikhaylov - President

(Seal)

_____
The Ohio Casualty Insurance Company Surety

By: Scott Adams - Attorney-In-Fact

(Seal)

_____
Surety

By: _____

(Seal)

_____
Surety

By: _____

(Seal)

_____
Surety

By: _____

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

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

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

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

ACKNOWLEDGMENT OF PRINCIPAL, IF A CORPORATION

State of New York County of Queens ss:

On this 23rd day of June, 2022, before me personally came Mikhail Mikhaylov to me known, who, being by me duly sworn did depose and say that he resides at 108-21 67th Ave. Forest Hills, NY 11375 that he is the President of the corporation described in and which executed the foregoing instrument; that he knows the seal of said corporation; that one of the seals affixed to said instrument is such seal; that it was so affixed by order of the directors of said corporation, and that he signed his name thereto by like order.

SOFYA DJALALYAN STATE OF NEW YORK NOTARY PUBLIC Qualified in Queens County 01DJ6392961 MY COMMISSION EXPIRES 06-10-2023

Notary Public or Commissioner of Deeds

ACKNOWLEDGMENT OF PRINCIPAL, IF A PARTNERSHIP

State of _____ County of _____ ss:

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

Notary Public or Commissioner of Deeds

ACKNOWLEDGMENT OF PRINCIPAL, IF AN INDIVIDUAL

State of _____ County of _____ ss:

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

Notary Public or Commissioner of Deeds

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

* * * * * * * *

Affix Acknowledgments and Justification of Sureties.

STATE OF New Jersey

COUNTY OF Morris

On this 23rd day of June, 2022 before me, a Notary Public within and for said County and State, personally appeared Scott Adams to me personally known, who being duly sworn, upon oath, did say that he is the authorized signatory for The Ohio Casualty Insurance Company, a corporation created, organized and existing under and by the virtue of the laws of the State of New Hampshire that the Corporate seal affixed to the foregoing instrument is the seal of said Corporation; that the seal was affixed; and the said Scott Adams did acknowledge that he executed the said instrument as the free and deed of said Corporation.

Notary Public

VIVIANE LOPRETE
Notary Public, State of New Jersey
My Commission Expires 09/09/2026

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: 8207607-992553

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, Martin Lyons; Scott Adams

all of the city of Cedar Knolls 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 7th day of April, 2022.

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

By: _____
David M. Carey, Assistant Secretary

State of PENNSYLVANIA
County of MONTGOMERY ss

On this 7th day of April, 2022 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 Seal
Teresa Pastella, Notary Public
Montgomery County
My commission expires March 28, 2025
Commission number 1126044
Member, Pennsylvania Association of Notaries

By: _____
Teresa 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 Mutual Insurance Company, and West American Insurance Company which resolutions are now in full force and effect reading as follows:

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

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

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

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

I, 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 23rd day of June, 2022.

By: _____
Renee C. Llewellyn, Assistant Secretary

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

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

Liberty Mutual. SURETY

THE OHIO CASUALTY INSURANCE COMPANY

FINANCIAL STATEMENT — DECEMBER 31, 2021

Assets

Cash and Bank Deposits	$134,628,410
*Bonds — U.S Government	1,015,453,874
*Other Bonds	4,501,743,412
*Stocks	268,876,063
Real Estate	0
Agents' Balances or Uncollected Premiums	812,483,102
Accrued Interest and Rents	33,044,141
Other Admitted Assets	1,691,401,219
Total Admitted Assets	**$8,463,930,361**

Liabilities

Unearned Premiums		$1,457,114,535
Reserve for Claims and Claims Expense		4,044,665,363
Funds Held Under Reinsurance Treaties		0
Reserve for Dividends to Policyholders		276,207
Additional Statutory Reserve		0
Reserve for Commissions, Taxes and Other Liabilities		460,636,079
Total		**$5,962,692,184**
Special Surplus Funds	$ 28,510,778	
Capital Stock	4,500,000	
Paid in Surplus	738,183,897	
Unassigned Surplus	1,730,043,502	
Surplus to Policyholders		**2,501,238,177**
Total Liabilities and Surplus		**$8,463,930,361**

THE OHIO CASUALTY INSURANCE COMPANY INCORPORATED 1919 NEW HAMPSHIRE

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

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

T A Mikolajewski

Assistant Secretary

THE OHIO CASUALTY INSURANCE COMPANY INCORPORATED 1919 NEW HAMPSHIRE

Seal No. 9038

STATE OF NEW YORK
DEPARTMENT OF FINANCIAL SERVICES

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

It is hereby certified that

The Ohio Casualty Insurance Company
of Keene, New Hampshire

a corporation organized under the laws of New Hampshire and duly authorized to transact the business of insurance in this State, is qualified to become surety or guarantor on all bonds, undertakings, recognizances, guaranties, and other obligations required or permitted by law; and that the said corporation is possessed of a capital and surplus including gross paid-in and contributed surplus and unassigned funds (surplus) aggregating the sum of $2,501,238,177. (Capital $4,500,000), as is shown by its sworn financial statement for the quarter ending, December 31, 2021, on file in this Department, prior to audit.

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

In Witness Whereof, I have hereunto set my hand and affixed the official seal of this Department at the City of Albany, this 8th day of March, 2022.

Adrienne A. Harris
Superintendent

By

Colleen M. Draper
Special Deputy Superintendent

State of New York

DEPARTMENT OF FINANCIAL SERVICES

WHEREAS IT APPEARS THAT

The Ohio Casualty Insurance Company

Home Office Address Keene, New Hampshire

Organized under the Laws of New Hampshire

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

licensed to do within this State the business of

accident and health,, fire, miscellaneous property, water damage, burglary and theft, glass, boiler and machinery, elevator, animal, collision, personal injury liability, property damage liability, workers' compensation and employers' liability, fidelity and surety, motor vehicle and aircraft physical damage, marine and inland marine and marine protection and indemnity insurance, as specified in paragraph(s) 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 19, 20 and 21 of Section 1113(a) of the New York Insurance Law and also such workers' compensation insurance as may be incident to coverages contemplated under paragraphs 20 and 21 of Section 1113(a), including insurances described in the Longshoremen's and Harbor Workers' Compensation Act (Public Law No. 803, 69 Cong. as amended; 33 USC Section 901 et seq. as amended) , and as authorized by Section 4102(c), insurance of every kind or description outside of the United States and reinsurance of every kind or description to the extent permitted by certified copy of its charter document on file in this Department until July 1, 2022.

NEW YORK STATE * DEPARTMENT OF FINANCIAL SERVICES * EXCELSIOR

In Witness Whereof, I have hereunto set my hand and affixed the official seal of this Department at the City of Albany, New York, this 1st day of July, 2021

Linda A. Lacewell
Superintendent

By

Colleen M. Draper
Special Deputy Superintendent

Original on Watermarked Paper

Client#: 164721 APSELEC

ACORD™ CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY) 6/23/2022

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer any rights to the certificate holder in lieu of such endorsement(s).

PRODUCER	CONTACT NAME: Commercial Support	
Edgewood Partners Ins. Center 40 Marcus Drive 3rd Floor Melville, NY 11747	PHONE (A/C, No, Ext): 631-390-9700	FAX (A/C, No): 631-390-9790
	E-MAIL ADDRESS: certificates@cookmaran.com	
	INSURER(S) AFFORDING COVERAGE	NAIC #
	INSURER A : Stillwater Property and Casualty Ins Co	16578
INSURED APS Electric Inc. 3636 33rd St., Ste 205 Long Island City, NY 11106	INSURER B :	
	INSURER C :	
	INSURER D :	
	INSURER E :	
	INSURER F :	

COVERAGES **CERTIFICATE NUMBER:** **REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSR	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
A	X COMMERCIAL GENERAL LIABILITY	X		MPGR3907	08/27/2021	08/27/2022	EACH OCCURRENCE	$2,000,000
	[ ] CLAIMS-MADE [X] OCCUR						DAMAGE TO RENTED PREMISES (Ea occurrence)	$500,000
							MED EXP (Any one person)	$10,000
							PERSONAL & ADV INJURY	$2,000,000
	GEN'L AGGREGATE LIMIT APPLIES PER:						GENERAL AGGREGATE	$4,000,000
	[ ] POLICY [X] PRO-JECT [ ] LOC						PRODUCTS - COMP/OP AGG	$4,000,000
	OTHER:							$
A	AUTOMOBILE LIABILITY			BAGR390700	08/27/2021	08/27/2022	COMBINED SINGLE LIMIT (Ea accident)	$1,000,000
	X ANY AUTO						BODILY INJURY (Per person)	$
	[ ] OWNED AUTOS ONLY [ ] SCHEDULED AUTOS						BODILY INJURY (Per accident)	$
	X HIRED AUTOS ONLY X NON-OWNED AUTOS ONLY						PROPERTY DAMAGE (Per accident)	$
								$
A	X UMBRELLA LIAB X OCCUR			XSGR3907	08/27/2021	08/27/2022	EACH OCCURRENCE	$5,000,000
	[ ] EXCESS LIAB [ ] CLAIMS-MADE						AGGREGATE	$5,000,000
	[ ] DED X RETENTION $10000							$
	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY Y / N						[ ] PER STATUTE [ ] OTH-ER	
	ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? [ ]	N / A					E.L. EACH ACCIDENT	$
	(Mandatory in NH)						E.L. DISEASE - EA EMPLOYEE	$
	If yes, describe under DESCRIPTION OF OPERATIONS below						E.L. DISEASE - POLICY LIMIT	$

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

Re: Contract #E17-0001.

New York City Department of Design & Construction, City of New York, including its officials and employees are included as additional insureds including ongoing and completed operations for general liability coverage as required by written contract.

CERTIFICATE HOLDER

New York City Department of
Design & Construction
30-30 Thomson Avenue
Long Island City, NY 11101

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

Leonard Scuzzio

CITY OF NEW YORK

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.

Edgewood Partners Insurance Center
[Name of broker or agent (typewritten)]

40 Marcus Dr. 3rd Fl. Melville, NY 11747
[Address of broker or agent (typewritten)]

christina.crane@epicbrokers.com
[Email address of broker or agent (typewritten)]

631-390-9700 / 631-390-9790
[Phone number/Fax number of broker or agent (typewritten)]

[Signature of authorized official, broker, or agent]

Christina Crane, Manager - Commercial Support
[Name and title of authorized official, broker, or agent (typewritten)]

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

Sworn to before me this 23rd day of June 2022

Robin Schoenleber

NOTARY PUBLIC FOR THE STATE OF NY

Robin Schoenleber
Notary Public, State of New York
Reg. No. 01SC6426343
Qualified in Nassau County
Commission Expires 12/06/25

NYSIF
New York State Insurance Fund

PO Box 66699, Albany, NY 12206
| nysif.com

CERTIFICATE OF WORKERS' COMPENSATION INSURANCE

^ ^ ^ ^ ^ ^ 043758900
APS ELECTRIC INC.
36-36 33RD STREET, SUITE #205
LONG ISLAND CITY NY 11106

SCAN TO VALIDATE
AND SUBSCRIBE

POLICYHOLDER	CERTIFICATE HOLDER #E17-0001
APS ELECTRIC INC. 36-36 33RD STREET, SUITE #205 LONG ISLAND CITY NY 11106	NEW YORK CITY DEPARTMENT OF DESIGN & CONSTRUCTION 30-30 THOMPSON AVENUE LONG ISLAND CITY NY 11101

POLICY NUMBER	CERTIFICATE NUMBER	POLICY PERIOD	DATE
Z2543 766-6	34559	04/01/2022 TO 04/01/2023	6/22/2022

THIS IS TO CERTIFY THAT THE POLICYHOLDER NAMED ABOVE IS INSURED WITH THE NEW YORK STATE INSURANCE FUND UNDER POLICY NO. 2543 766-6, 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, AND, WITH RESPECT TO OPERATIONS OUTSIDE OF NEW YORK, TO THE POLICYHOLDER'S REGULAR NEW YORK STATE EMPLOYEES ONLY.

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 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: 500370671

U-26.3

NEW YORK STATE | Workers' Compensation Board

CERTIFICATE OF INSURANCE COVERAGE
DISABILITY AND PAID FAMILY LEAVE BENEFITS LAW

PART 1. To be completed by Disability and Paid Family Leave Benefits Carrier or Licensed Insurance Agent of that Carrier

1a. Legal Name & Address of Insured (use street address only)
APS ELECTRIC INC
3636 33RD ST - SUITE 205
LONG ISLAND CITY, NY 11106

Work Location of Insured *(Only required if coverage is specifically limited to certain locations in New York State, i.e., Wrap-Up Policy)*

1b. Business Telephone Number of Insured
6469326889

1c. Federal Employer Identification Number of Insured or Social Security Number
04-3758900

2. Name and Address of Entity Requesting Proof of Coverage (Entity Being Listed as the Certificate Holder)
New York City Department of Design & Construction
30-30 Thompson Avenue
Long Island City , NY 11101

3a. Name of Insurance Carrier
Standard Security Life Insurance Company of New York

3b. Policy Number of Entity Listed in Box "1a"
Z14438-000

3c. Policy effective period
8/26/2021 to 6/21/2023

4. Policy provides the following benefits:
- [x] A. Both disability and paid family leave benefits.
- [ ] B. Disability benefits only.
- [ ] C. Paid family leave benefits only.

5. Policy covers:
- [x] A. All of the employer's employees eligible under the NYS Disability and Paid Family Leave Benefits Law.
- [ ] B. Only the following class or classes of employer's employees:

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

Date Signed 6/22/2022 By _____
(Signature of insurance carrier's authorized representative or NYS Licensed Insurance Agent of that insurance carrier)

Telephone Number (212) 355-4141 Name and Title SUPERVISOR-DBL/POLICY 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.

Date Signed _____ By _____
(Signature of Authorized NYS Workers' Compensation Board Employee)

Telephone Number _____ Name and Title _____

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

(NO TEXT ON THIS PAGE)

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.

TABLE OF CONTENTS

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

Boilermaker (First Year)

Effective Period: 7/1/2021 - 6/30/2022
Wage Rate Per Hour: 65% of Journeyperson's rate
Supplemental Benefit Rate Per Hour: $33.12

Boilermaker (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: $35.05

Boilermaker (Second Year: 2nd Six Months)

Effective Period: 7/1/2021 - 6/30/2022
Wage Rate Per Hour: 75% of Journeyperson's rate
Supplemental Benefit Rate Per Hour: $37.01

Boilermaker (Third Year: 1st Six Months)

Effective Period: 7/1/2021 - 6/30/2022
Wage Rate Per Hour: 80% of Journeyperson's rate
Supplemental Benefit Rate Per Hour: $38.92

Boilermaker (Third Year: 2nd Six Months)

Effective Period: 7/1/2021 - 6/30/2022
Wage Rate Per Hour: 85% of Journeyperson's rate
Supplemental Benefit Rate Per Hour: $40.87

Boilermaker (Fourth Year: 1st Six Months)

Effective Period: 7/1/2021 - 6/30/2022
Wage Rate Per Hour: 90% of Journeyperson's rate
Supplemental Benefit Rate Per Hour: $42.82

Boilermaker (Fourth Year: 2nd Six Months)

Effective Period: 7/1/2021 - 6/30/2022
Wage Rate Per Hour: 95% of Journeyperson's rate
Supplemental Benefit Rate Per Hour: $44.74

(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 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)

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)

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 - 6/30/2022
Wage Rate Per Hour: 78% of Journeyperson's rate
Supplemental Benefit Rate Per Hour: $14.25

Handler (Second 1000 Hours)

Effective Period: 7/1/2021 - 6/30/2022
Wage Rate Per Hour: 80% of Journeyperson's rate
Supplemental Benefit Rate Per Hour: $14.25

Handler (Third 1000 Hours)

Effective Period: 7/1/2021 - 6/30/2022
Wage Rate Per Hour: 83% of Journeyperson's rate
Supplemental Benefit Rate Per Hour: $14.25

Handler (Fourth 1000 Hours)

Effective Period: 7/1/2021 - 6/30/2022
Wage Rate Per Hour: 89% 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 - 6/30/2022
Wage Rate per Hour: $20.20
Supplemental Benefit Rate per Hour: $10.07

House Wrecker - Second Year

Effective Period: 7/1/2021 - 6/30/2022
Wage Rate per Hour: $22.15
Supplemental Benefit Rate per Hour: $10.07

House Wrecker - Third Year

Effective Period: 7/1/2021 - 6/30/2022
Wage Rate per Hour: $23.65
Supplemental Benefit Rate per Hour: $10.07

House Wrecker - Fourth Year

Effective Period: 7/1/2021 - 6/30/2022
Wage Rate per Hour: $26.15
Supplemental Benefit Rate per Hour: $10.07

(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 - 6/30/2022
Wage Rate per Hour: $20.63
Supplemental Benefit Rate per Hour: $17.61

Iron Worker (Ornamental) - Second Year

Effective Period: 7/1/2021 - 6/30/2022
Wage Rate per Hour: $24.22
Supplemental Benefit Rate per Hour: $18.86

Iron Worker (Ornamental) - Third Year

Effective Period: 7/1/2021 - 6/30/2022
Wage Rate per Hour: $27.80
Supplemental Benefit Rate per Hour: $20.12

Iron Worker (Ornamental) - Fourth Year

Effective Period: 7/1/2021 - 6/30/2022
Wage Rate per Hour: $31.38
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 - 6/30/2022
Wage Rate per Hour: $28.21
Supplemental Benefit Rate per Hour: $57.12

Iron Worker (Structural) - 7- 18 Months

Effective Period: 7/1/2021 - 6/30/2022
Wage Rate per Hour: $28.81
Supplemental Benefit Rate per Hour: $57.12

Iron Worker (Structural) - 19 - 36 months

Effective Period: 7/1/2021 - 6/30/2022
Wage Rate per Hour: $29.42
Supplemental Benefit Rate per Hour: $57.12

(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 - 6/30/2022
Wage Rate per Hour: $20.20
Supplemental Benefit Rate per Hour: $10.07

Mason Tender - Second Year

Effective Period: 7/1/2021 - 6/30/2022
Wage Rate per Hour: $22.15
Supplemental Benefit Rate per Hour: $10.07

Mason Tender - Third Year

Effective Period: 7/1/2021 - 6/30/2022
Wage Rate per Hour: $23.65
Supplemental Benefit Rate per Hour: $10.07

Mason Tender - Fourth Year

Effective Period: 7/1/2021 - 6/30/2022
Wage Rate per Hour: $26.15
Supplemental Benefit Rate per Hour: $10.07

(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 - 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 - 6/30/2022
Wage Rate per Hour: $20.20
Supplemental Benefit Rate per Hour: $10.07

Plasterer Tender - Second Year

Effective Period: 7/1/2021 - 6/30/2022
Wage Rate per Hour: $22.15
Supplemental Benefit Rate per Hour: $10.07

Plasterer Tender - Third Year

Effective Period: 7/1/2021 - 6/30/2022
Wage Rate per Hour: $23.65
Supplemental Benefit Rate per Hour: $10.07

Plasterer Tender - Fourth Year

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

Wage Rate per Hour: **$26.15**
Supplemental Benefit Rate per Hour: **$10.07**

(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 - 6/30/2022
Wage Rate Per Hour: 35% of Journeyperson's rate
Supplemental Benefit Rate Per Hour: $3.51

Roofer - Second Year

Effective Period: 7/1/2021 - 6/30/2022
Wage Rate Per Hour: 50% of Journeyperson's rate
Supplemental Benefit Rate Per Hour: $17.54

Roofer - Third Year

Effective Period: 7/1/2021 - 6/30/2022
Wage Rate Per Hour: 60% of Journeyperson's rate
Supplemental Benefit Rate Per Hour: $20.99

Roofer - Fourth Year

Effective Period: 7/1/2021 - 6/30/2022
Wage Rate Per Hour: 75% of Journeyperson's rate
Supplemental Benefit Rate Per Hour: $26.18

(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 - 6/30/2022
Wage Rate Per Hour: 25% of Journeyperson's rate
Supplemental Rate Per Hour: $6.76

Sheet Metal Worker (7-18 Months)

Effective Period: 7/1/2021 - 6/30/2022
Wage Rate Per Hour: 35% of Journeyperson's rate
Supplemental Rate Per Hour: $19.55

Sheet Metal Worker (19-30 Months)

Effective Period: 7/1/2021 - 6/30/2022
Wage Rate Per Hour: 45% of Journeyperson's rate
Supplemental Rate Per Hour: $26.65

Sheet Metal Worker (31-36 Months)

Effective Period: 7/1/2021 - 6/30/2022
Wage Rate Per Hour: 55% of Journeyperson's rate
Supplemental Rate Per Hour: $31.50

Sheet Metal Worker (37-42 Months)

Effective Period: 7/1/2021 - 6/30/2022
Wage Rate Per Hour: 55% of Journeyperson's rate
Supplemental Rate Per Hour: $31.50

Sheet Metal Worker (43-48 Months)

Effective Period: 7/1/2021 - 6/30/2022
Wage Rate Per Hour: 70% of Journeyperson's rate
Supplemental Rate Per Hour: $38.78

Sheet Metal Worker (49-54 Months)

Effective Period: 7/1/2021 - 6/30/2022
Wage Rate Per Hour: 70% of Journeyperson's rate
Supplemental Rate Per Hour: $38.78

Sheet Metal Worker (55-60 Months)

Effective Period: 7/1/2021 - 6/30/2022
Wage Rate Per Hour: 80% of Journeyperson's rate
Supplemental Rate Per Hour: $43.65

(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 - 6/30/2022
Wage Rate Per Hour: 35% of Journeyperson's rate
Supplemental Rate Per Hour: $16.51

Sign Erector - First Year: 2nd Six Months

Effective Period: 7/1/2021 - 6/30/2022
Wage Rate Per Hour: 40% of Journeyperson's rate
Supplemental Rate Per Hour: $18.74

Sign Erector - Second Year: 1st Six Months

Effective Period: 7/1/2021 - 6/30/2022
Wage Rate Per Hour: 45% of Journeyperson's rate
Supplemental Rate Per Hour: $20.96

Sign Erector - Second Year: 2nd Six Months

Effective Period: 7/1/2021 - 6/30/2022
Wage Rate Per Hour: 50% of Journeyperson's rate
Supplemental Rate Per Hour: $23.21

Sign Erector - Third Year: 1st Six Months

Effective Period: 7/1/2021 - 6/30/2022
Wage Rate Per Hour: 55% of Journeyperson's rate
Supplemental Rate Per Hour: $31.44

Sign Erector - Third Year: 2nd Six Months

Effective Period: 7/1/2021 - 6/30/2022
Wage Rate Per Hour: 60% of Journeyperson's rate
Supplemental Rate Per Hour: $34.20

Sign Erector - Fourth Year: 1st Six Months

Effective Period: 7/1/2021 - 6/30/2022
Wage Rate Per Hour: 65% of Journeyperson's rate
Supplemental Rate Per Hour: $37.76

Sign Erector - Fourth Year: 2nd Six Months

Effective Period: 7/1/2021 - 6/30/2022
Wage Rate Per Hour: 70% of Journeyperson's rate
Supplemental Rate Per Hour: $40.62

Sign Erector - Fifth Year

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

Wage Rate Per Hour: 75% of Journeyperson's rate
Supplemental Rate Per Hour: $43.44

Sign Erector - Sixth Year

Effective Period: 7/1/2021 - 6/30/2022
Wage Rate Per Hour: 80% of Journeyperson's rate
Supplemental Rate Per Hour: $46.27

(Local #137)

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

Steamfitter - First Year

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.

Steamfitter - Third Year

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

Steamfitter - Fourth Year

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 - 6/30/2022
Wage Rate per Hour: $20.75
Supplemental Benefit Rate per Hour: $12.99

Refrigeration & Air Conditioner (Second Year)

Effective Period: 7/1/2021 - 6/30/2022
Wage Rate per Hour: $25.04
Supplemental Benefit Rate per Hour: $14.23

Refrigeration & Air Conditioner (Third Year)

Effective Period: 7/1/2021 - 6/30/2022
Wage Rate per Hour: $29.17
Supplemental Benefit Rate per Hour: $15.53

Refrigeration & Air Conditioner (Fourth Year)

Effective Period: 7/1/2021 - 6/30/2022
Wage Rate per Hour: $35.22
Supplemental Benefit Rate per Hour: $17.29

(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 comptroller.nyc.gov/wages. 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 comptroller.nyc.gov/wages. Contractors must pay the wages and supplements in effect when the worker, laborer, mechanic performs the work. Preliminary schedules for future one-year periods appear in the City Record on or about June 1 each succeeding year. Final schedules appear on or about July 1 in the City Record and on our web site comptroller.nyc.gov/wages.

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 comptroller.nyc.gov/wages.

Wasyl Kinach, P.E.
Director of Classifications
Bureau of Labor Law

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ASBESTOS HANDLER
SEE HAZARDOUS MATERIAL HANDLER

BLASTER

Blaster

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 ½), 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 - 6/30/2022
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

Overtime Description
For Repair and Maintenance work:
Time and one half the regular rate after an 8 hour day.
Time and one half the regular rate for Saturday.
Double time the regular rate for Sunday.
For New Construction work:
Double time the regular rate after an 8 hour day.
Double time the regular time rate for Saturday.
Double time the regular rate for Sunday.

Overtime Holidays
Double time the regular rate for work on the following holiday(s).
New Year's Day
President's Day
Memorial Day
Independence Day

Columbus Day
Election Day
Veteran's Day
Thanksgiving Day
Christmas Day

Quadruple time the regular rate for work on the following holiday(s).
Labor Day

Paid Holidays
Good Friday
Day after Thanksgiving
Day before Christmas
Day before New Year's Day

Shift Rates
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

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. 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
None

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 one-half 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 - 6/30/2022
Wage Rate per Hour: $42.27
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 ½) hours paid for eight (8) hours of labor and be permitted one-half (½) hour for mealtime.

(Carpenters District Council)

DERRICKPERSON AND RIGGER

Derrick Person & Rigger

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

Derrick Person & Rigger - Site Work

Assists the Stone Mason-Setter in the setting of stone and paving stone.

Effective Period: 7/1/2021 - 6/30/2022
Wage Rate per Hour: $44.86
Supplemental Benefit Rate per Hour: $43.37

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
None

Shift Rates
When three shifts are utilized each shift shall work seven and one half-hours (7 1/2 hours) and paid for 8 hours, allowing for one half hour for lunch.

(Carpenters District Council)

DOCKBUILDER - PILE DRIVER

Dockbuilder - Pile Driver

Effective Period: 7/1/2021 - 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

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

None

(Local #3)

ELECTRICIAN - ALARM TECHNICIAN

(Scope of Work - Inspect, test, repair, and replace defective, malfunctioning, or broken devices, components and controls of Fire, Burglar and Security Systems)

Alarm Technician

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

Overtime Description

Time and one half the regular rate for work on the following holidays: Columbus Day, Veterans Day, Day after Thanksgiving.
Double time the regular rate for work on the following holidays: New Year's day, Martin Luther King Jr. Day, President's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, Christmas Day.

Overtime

Time and one half the regular rate after an 8 hour day.
Time and one half the regular rate for Saturday.
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
None

(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

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Engineer - Building Work Maintenance Engineers I

Installing, repairing, maintaining, dismantling (of all equipment including: Steel Cutting and Bending Machines, Mechanical Heaters, Mine Hoists, Climbing Cranes, Tower Cranes, Linden Peine, Lorain, Liebherr, Mannes, or machines of a similar nature, Well Point Systems, Deep Well Pumps, Concrete Mixers with loading Device, Concrete Plants, Motor Generators when used for temporary power and lights), skid steer machines of a similar nature including bobcat.

Effective Period: 7/1/2021 - 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
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
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
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 - 6/30/2022
Wage Rate per Hour: $46.55
Supplemental Benefit Rate per Hour: $47.74
Supplemental Note: Supplemental Benefit Overtime Rate: $71.62

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)

Handler

Effective Period: 7/1/2021 - 6/30/2022
Wage Rate per Hour: $38.05
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 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
None

(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)

House Wrecker - Tier A

On all work sites the first, second, eleventh and every third House Wrecker thereafter will be Tier A House Wreckers (i.e. 1st, 2nd, 11th, 14th etc). Other House Wreckers may be Tier B House Wreckers.

Effective Period: 7/1/2021 - 6/30/2022
Wage Rate per Hour: $37.63
Supplemental Benefit Rate per Hour: $30.37

House Wrecker - Tier B

Effective Period: 7/1/2021 - 6/30/2022
Wage Rate per Hour: $26.86
Supplemental Benefit Rate per Hour: $22.78

Overtime
Time and one half the regular rate after an 8 hour day.
Time and one half the regular rate for Saturday.
Double time the regular rate for Sunday.

Overtime Holidays
Double time the regular rate for work on the following holiday(s).
New Year's Day
President's Day
Memorial Day
Independence Day
Labor Day
Thanksgiving Day
Christmas Day

Paid Holidays
None

(Mason Tenders District Council)

IRON WORKER - ORNAMENTAL

Iron Worker - Ornamental

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

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 - 6/30/2022
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.

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)

Laborer

Excavation and foundation work for buildings, heavy construction, engineering work, and hazardous waste removal in connection with the above work. Landscaping tasks in connection with heavy construction work, engineering work and building projects. Projects include, but are not limited to pollution plants, sewers, parks, subways, bridges, highways, etc.

Effective Period: 7/1/2021 - 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 ½), 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 - 6/30/2022
Wage Rate per Hour: $56.73
Supplemental Benefit Rate per Hour: $41.76

Marble Finisher

Effective Period: 7/1/2021 - 6/30/2022
Wage Rate per Hour: $44.32
Supplemental Benefit Rate per Hour: $38.96

Marble Polisher

Effective Period: 7/1/2021 - 6/30/2022
Wage Rate per Hour: $42.91
Supplemental Benefit Rate per Hour: $31.61

Marble Maintenance Finisher

Effective Period: 7/1/2021 - 6/30/2022
Wage Rate per Hour: $26.73
Supplemental Benefit Rate per Hour: $13.59

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
None

(Local #7)

MASON TENDER

Mason Tender

Effective Period: 7/1/2021 - 6/30/2022
Wage Rate per Hour: $39.20
Supplemental Benefit Rate per Hour: $31.24

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.
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
None

(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 - 6/30/2022
Wage Rate per Hour: $51.66
Supplemental Benefit Rate per Hour: $43.67

Mosaic Mechanic - Mosaic & Terrazzo Finisher

Effective Period: 7/1/2021 - 6/30/2022
Wage Rate per Hour: $50.06
Supplemental Benefit Rate per Hour: $43.67

Mosaic Mechanic - Machine Operator Grinder

Effective Period: 7/1/2021 - 6/30/2022
Wage Rate per Hour: $50.06
Supplemental Benefit Rate per Hour: $43.67

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

(Local #8A-28A)

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
None

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 ½) 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

Plasterer

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 - 6/30/2022
Wage Rate per Hour: $39.20
Supplemental Benefit Rate per Hour: $31.24

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.
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 - 6/30/2022
Wage Rate per Hour: $44.37
Supplemental Benefit Rate per Hour: $18.31

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 - 6/30/2022
Wage Rate per Hour: $69.33
Supplemental Benefit Rate per Hour: $27.98

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)

Journeyperson

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

Roofer

Effective Period: 7/1/2021 - 6/30/2022
Wage Rate per Hour: $44.25
Supplemental Benefit Rate per Hour: $34.81

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 - 6/30/2022
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.

Sheet Metal Worker - Fan Maintenance

(The temporary operation of fans or blowers in new or existing buildings for heating and/or ventilation, and/or air conditioning prior to the completion of the project.)

Effective Period: 7/1/2021 - 6/30/2022
Wage Rate per Hour: $41.09
Supplemental Benefit Rate per Hour: $53.34

Sheet Metal Worker - Duct Cleaner

Effective Period: 7/1/2021 - 6/30/2022
Wage Rate per Hour: $18.49
Supplemental Benefit Rate per Hour: $11.94

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.

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 - 6/30/2022
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.

Overtime
Time and one half the regular rate after an 8 hour day.
Time and one half the regular rate for Saturday.
Double time the regular rate for Sunday.

Overtime Holidays
Double time the regular rate for work on the following holiday(s).
New Year's Day
Martin Luther King Jr. Day
President's Day
Memorial Day
Independence Day
Labor Day
Columbus Day
Veteran's Day
Thanksgiving Day
Christmas Day

Paid Holidays
None

(Local #28)

SHIPYARD WORKER

Shipyard Mechanic - First Class

Effective Period: 7/1/2021 - 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 - 6/30/2022
Wage Rate per Hour: $52.29
Supplemental Benefit Rate per Hour: $57.49

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 - 6/30/2022
Wage Rate per Hour: $59.05
Supplemental Benefit Rate per Hour: $58.14
Supplemental Note: Overtime supplemental benefit rate: $115.54

Steamfitter -Temporary Services

Effective Period: 7/1/2021 - 6/30/2022
Wage Rate per Hour: $44.88
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 - 6/30/2022
Wage Rate per Hour: $42.85
Supplemental Benefit Rate per Hour: $19.46

Overtime
Time and one half the regular rate after an 8 hour day.
Time and one half the regular rate for Saturday.
Double time the regular rate for Sunday.

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 - 6/30/2022
Wage Rate per Hour: $43.71
Supplemental Benefit Rate per Hour: $35.10

Overtime
Time and one half the regular rate after a 7 hour day.
Time and one half the regular rate for Saturday.
Double time the regular rate for Sunday.

Overtime Holidays
Double time the regular rate for work on the following holiday(s).
New Year's Day
President's Day
Good Friday
Memorial Day
Independence Day
Labor Day
Columbus Day
Veteran's Day
Thanksgiving Day
Day after Thanksgiving
Christmas Day

Paid Holidays
None

Shift Rates
Off shift work day (work performed outside the regular 8:00 A.M. to 3:30 P.M. workday): shift differential of one and one quarter (1¼) times the regular straight time rate of pay for the seven hours of actual off-shift work.

(Local #7)

TILE LAYER - SETTER

Tile Layer - Setter

Effective Period: 7/1/2021 - 6/30/2022
Wage Rate per Hour: $56.42
Supplemental Benefit Rate per Hour: $39.75

Overtime
Time and one half the regular rate after a 7 hour day.
Time and one half the regular rate for Saturday.
Double time the regular rate for Sunday.

Overtime Holidays
Double time the regular rate for work on the following holiday(s).
New Year's Day
President's Day
Good Friday
Memorial Day
Independence Day
Labor Day
Columbus Day
Veteran's Day
Thanksgiving Day
Day after Thanksgiving
Christmas Day

Shift Rates
Off shift work day (work performed outside the regular 8:00 A.M. to 3:30 P.M. workday): shift differential of one and one quarter (1¼) times the regular straight time rate of pay for the seven hours of actual off-shift work.

(Local #7)

TIMBERPERSON

Timberperson

Effective Period: 7/1/2021 - 6/30/2022
Wage Rate per Hour: $52.50
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
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. 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.

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 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 year 0 hours
For year 1 - 2 48 hours per year
For year 3 - 9 96 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.

Department of Design and Construction

Issue Date: March 15, 2020

DDC STANDARD GENERAL CONDITIONS

FOR SINGLE CONTRACT PROJECTS

Department of Design and Construction

Issue Date: March 15, 2020

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DIVISION 01 – DDC STANDARD GENERAL CONDITIONS
SINGLE CONTRACT PROJECTS
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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 PROJECT RECORD DRAWINGS 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.

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.

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;
   l. Distribution of the Contract Documents;
   m. Submittal procedures;
   n. Safety procedures;
   o. LEED requirements;
   p. Commissioning requirements;
   q. Preparation of record documents;
   r. Historic Treatment requirements;
   s. Use of the premises;
   t. Work restrictions;
   u. 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;
   l. RFI's;
   m. Pending changes;
   n. Status of outstanding payments and change orders;
   o. LEED requirements including Construction Waste Management, Indoor Air Quality Plan, Dust Mitigation and Commissioning; and,
   p. Status of Administrative Code reporting requirements related to the Project.

1.7 REQUESTS FOR INFORMATION (RFI):

A. Procedure: Immediately on discovery of the need for information or interpretation of the Contract Documents, and if not possible to request interpretation at Project meeting, the Contractor 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

SECTION 01 32 00
CONSTRUCTION PROGRESS DOCUMENTATION

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 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:
   1. Submittals schedule
   2. Daily construction reports
   3. Material location reports
   4. Field condition reports
   5. Special reports

B. RELATED SECTIONS: :

1.	Section 01 10 00	SUMMARY
2.	Section 01 32 22	PHOTOGRAPHIC DOCUMENTATION
3.	Section 01 32 16.10	PROJECT SCHEDULES (METHOD A)
4.	Section 01 32 16.20	PROJECT SCHEDULES (METHOD B)
5.	Section 01 32 16.30	PROJECT SCHEDULES (METHOD C)
6.	Section 01 33 00	SUBMITTAL PROCEDURES
7.	Section 01 40 00	QUALITY REQUIREMENTS

1.3 DEFINITIONS:

A. Refer to Article 2 of the Contract for definition of terms, words and expressions used in the General Conditions not otherwise defined herein.

B. Design Consultant: “Design Consultant” 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 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 Superintendents 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.

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.
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.
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.

Term	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	Responsibility: Identify the party (e.g. Contractor, subcontractor, City, etc.) responsible for the Activity.
PHAS	Phase: Breakdown of Activities in Milestones, pre-construction, procurement, construction and close-out Activities.
LOCN	Location: Breakdown by floor or elevation.
AREA	Area: 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. 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;

   l. 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.

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.
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:

1. 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	Responsibility: Identify the party (e.g. Contractor, subcontractor, City, etc.) responsible for the Activity.
PHAS	Phase: Breakdown of Activities in Milestones, pre-construction, procurement, construction and close-out Activities.
LOCN	Location: Breakdown by floor or elevation.
AREA	Area: 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.

Term	**Definition**
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.
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.

Term	**Definition**
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.
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:

1. 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	Responsibility: Identify the party (e.g. Contractor, subcontractor, City, etc.) responsible for the Activity.
PHAS	Phase: Breakdown of Activities in Milestones, pre-construction, procurement, construction and close-out Activities.
LOCN	Location: Breakdown by floor or elevation.
AREA	Area: 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

l. 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.

l. 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 77 00 CLOSEOUT PROCEDURES
F. Section 01 78 39 CONTRACT RECORD DOCUMENTS
G. Section 01 81 13.03 SUSTAINABLE DESIGN REQUIREMENTS FOR LEED v3 BUILDINGS
H. 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.

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. Submittals: Written and graphic information that requires responsive actions and includes, without limitation, all Shop Drawings, product data, letters of certification, tests and other information required for quality control and as required by the Contract Documents.

D. Informational Submittals: Written information that does not require responsive action. 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. The Contractor must provide reproducible Coordination Drawing(s) of the reflective ceiling showing the integration of all applicable Contract Work, including general construction work as well as trade work (Plumbing, HVAC, and Electrical) to be performed by subcontractors. The Coordination Drawing(s) must include, without limitation, the following information:
   1. General Construction Contract Work: show the reflective ceiling plan, including starting points, ceiling and beam soffits elevations, ceiling heights, roof openings, etc.
   2. HVAC Contract Work: show ductwork, heating and sprinkler piping, location of grilles, registers, etc., and access doors in hung ceilings. Locations must be fixed by elevations and dimensions from column centerlines and/or walls.
   3. Plumbing Contract Work: show piping, valves, cleanouts etc., indicating locations, elevations and indicating the necessary access doors.

4. Electrical Contract Work: show fixtures, large conduit runs, clearances, pull boxes, junction boxes, sound system speakers, etc.

B. The Contractor must issue the completed Coordination Drawing(s) to the Resident Engineer for his/her review. The Resident Engineer may call as many meetings as necessary with the Contractor, including attendance by applicable subcontractors, and may call on the services of the Design Consultant where necessary, to resolve any conflicts that become apparent.

C. 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.

D. 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.

E. 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.

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. Submittals Schedule: The Submittals Schedule is set forth in Schedule F, which is included in the Addendum.

D. Identification: Place a permanent label or title block on each Submittal for identification.

1. Indicate name of firm or entity that prepared each Submittal on label or title block.
2. Provide a space approximately 6 by 8 inches on label or beside title block to record Contractor's review and approval markings and action taken by Design Consultant.

3. Include the following minimum information on label for processing and recording action taken:
   a. Project name, DDC Project Number, and Contract Number
   b. Date
   c. Name and address of Design Consultant
   d. Name and address of Contractor
   e. Name and address of subcontractor
   f. Name and address of supplier
   g. Name of manufacturer
   h. Submittal number or other unique identifier, including revision identifier
   i. Number and title of appropriate Specification Section
   j. Drawing number and detail references, as appropriate
   k. Location(s) where product is to be installed, as appropriate
   l. Other necessary identification

E. Transmittal:

1. Package each Submittal individually and appropriately for transmittal and handling. Transmit each Submittal using a transmittal form in triplicate. Transmittals received from sources other than the Contractor will be returned without review. Re-submission of the same drawings or product data must bear the original number of the prior submission and the original titles.

2. Transmittal Form: Provide locations on form for the following information:

   a. Project name, DDC Project number and Contract Number
   b. Date
   c. Destination (To:)
   d. Source (From:)
   e. Names of Contractor, subcontractor, manufacturer, and supplier
   f. Category and type of Submittal
   g. Submittal purpose and description
   h. Specification Section number and title
   i. Drawing number and detail references, as appropriate
   j. Transmittal number, numbered consecutively
   k. Submittal and transmittal distribution record
   l. Remarks
   m. Signature of transmitter

F. Shop Drawings:

1. Procedures for Preparing, Forwarding, Checking, and Returning all Shop Drawings 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, Schedule F of the Addendum 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
   l. Design calculations
   m. Compliance with specified standards
   n. Notation of coordination requirements
   o. Notation of dimensions established by field measurement
   p. Relationship to adjoining construction clearly indicated
   q. Seal and signature of professional engineer if specified
   r. Wiring Diagrams: Differentiate between manufacturer-installed and field-installed wiring
   s. All other information necessary for the Work and/or required by the Commissioner

5. Titles and Reference: Shop Drawings 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.

Acceptance will be given based upon the Contractor's representation that what is shown in the Submittal is in accordance with the requirements of the Contract Drawings and Specifications. If the Contractor's statement indicates any discrepancy between what is shown in the Submittal and the requirements of the Contract Drawings and Specifications, such change is subject to review and prior written acceptance by the Design Consultant. In addition, such change may require a change order in accordance with Article 25 of the Contract. In the event any such change is approved, any additional expense or increased cost in connection with the change is the sole responsibility of the Contractor.

8. Submission of Shop Drawings:

   a. Initial Submission: The Contractor 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 stamped "No Exceptions Taken", be dated and distributed by the Design Consultant as follows:
      1) Two (2) copies thereof will be returned to the Contractor by letter
      2) Three (3) copies of the approved Shop Drawing and copy of the transmittal letter to the Contractor will be forwarded to DDC
      3) One copy will be retained by the Design Consultant
      4) One copy will be forwarded / retained by sub-consultant(s) as appropriate

      Should the Shop Drawing(s) be "Rejected" or noted "Revise and Resubmit" by the Design Consultant, the Design Consultant will return the Shop Drawings to the Contractor with the necessary corrections and changes to be made as indicated thereon.

   b. Revisions: The Contractor must make such corrections and changes and again submit seven (7) copies of each shop drawing to the Design Consultant. The Contractor 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.

G. 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 F, 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.
   l. Testing by recognized testing agency.
   m. Application of testing agency labels and seals.
   n. Notation of coordination requirements.

5. Submit Product Data before or concurrent with Samples.

6. Submission of Product Data:

   a. Initial Submission: The Contractor 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 stamped "No Exception Taken", be dated and distributed as follows:

      1) Two (2) copies thereof will be returned to the Contractor by letter

      2) Three (3) copies of the Product Data and copy of the transmittal letter to the Contractor will be forwarded to DDC

      3) One copy will be retained by the Design Consultant

      4) One copy will be forwarded / retained by sub-consultant(s) as appropriate

      Should the Product Data be “Rejected” or noted “Revise and Resubmit” by the Design Consultant, the Design Consultant will return one (1) set of such Product Data to the Contractor with the necessary corrections and changes to be made indicated and one (1) set to DDC.

7. Revisions: The Contractor must make such corrections and changes and again submit seven (7) copies of each Product Data for the review of the Design Consultant. The Contractor 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.

H. 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.

12. Equivalent Quality: Any material, article and/or equipment which is designated in the Drawings and/or Specifications by a number in the catalogue of any manufacturer or by a manufacturer's grade or trade name is designated for the purpose of describing the material, article and/or equipment and fixing the standard of performance and/or function, as well as the quality and/or finish. Any material, article and/or equipment which is other than what is specified in the Drawings and/or Specifications will only be accepted if the Commissioner makes a written determination that such material, article and/or equipment is equivalent to that which is specified in the Drawings and/or Specifications.

13. The submission of any material, article and/or equipment as the equal of any material, article and/or equipment set forth in the Drawings and/or Specifications as a standard 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.

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;
2. 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

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. EMT may only be used where specifically indicated. In no case will EMT be permitted in spaces other than hung ceilings and dry wall partitions.

F. FLEXIBLE METALLIC CONDUIT (FMC): 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.

3. 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 ½) 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
h.	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 plate-type connectors encased in composition covers as manufactured by O.Z., Burndy, National Electric Products or approved equal.
7. Splices in branch wiring for sound systems and fire systems, 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

1. 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 ½

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:

1.	Open Frame	40 degrees C.
2.	Totally enclosed and enclosed fan cooled	55 degrees C.
3.	Explosion proof and submersible	55 degrees C.
4.	Partially enclosed and drip proof	40 degrees C.

The temperature of the various parts of a motor 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: ½ 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 Geotechnical Services (OEGS) 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 OEGS.

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

PART I – GENERAL

1.1 RELATED DOCUMENTS:

A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 SUMMARY:

A. This Section includes administrative and procedural requirements for the treatment of Landmark Structures and Landmark Quality Structures, as identified in the Addendum. Specific requirements are indicated in other sections of the Specifications.

B. This Section includes, without limitation, the following:

1. Storage and protection of existing historic materials
2. 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.

D. Photographs for Designated Landmark Structures: Submit photographs in accordance with Section 01 32 33 PHOTOGRAPHIC DOCUMENTATION and as described in this section.

E. Record Documents: Include modifications to manufacturer's written instructions and procedures, as documented in the historic treatment preconstruction conference and as the Work progresses.

1.6 QUALITY ASSURANCE:

A. Special Experience Requirements: Special Experience Requirements may apply to the firm that will provide Historic Treatment Services. If applicable, such Special Experience Requirements are set forth in the Bid Booklet.

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. Conflicting Requirements
   3. Quality Assurance
   4. Quality Control
   5. Approval of Materials
   6. Special Inspections (Controlled Inspection)
   7. Inspections by Other City Agencies
   8. Certificates of Approval
   9. Acceptance Tests
   10. 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 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.

H. COMMISSIONING: Refer to the Addendum to identify whether this Project will be commissioned by an independent third party under separate contract with the City of New York. Commissioning 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.

1.5 CONFLICTING REQUIREMENTS:

A. General: If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, the Contractor 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.

1.6 QUALITY ASSURANCE:

A. General: Qualifications paragraphs in this Article establish the minimum qualification levels required. Individual Specification Sections specify additional requirements.

B. Installer Qualifications: Special Experience Requirements may apply to the firm that will install, erect or assemble specified work required for the Project. If applicable, such Special Experience Requirements are set forth in the Bid Booklet.

C. Manufacturer Qualifications: Special Experience Requirements may apply to the firm that will manufacture equipment, products or systems specified for the Project. If applicable, such Special Experience Requirements are set forth in the Bid Booklet.

D. Fabricator Qualifications: Special Experience Requirements may apply to the firm that will fabricate material, products or systems specified for the Project. If applicable, such Special Experience Requirements are set forth in the Bid Booklet.

E. Professional Engineer Qualifications: A professional engineer who is licensed to practice in the State of New York and who is experienced in providing engineering services of the kind indicated. Engineering

services are defined as those performed for installations of the system, assembly, or products that are similar to those indicated for this Project in material, design, and extent.

F. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.

G. Mockups: Before installing portions of the Work requiring mockups, build mockups for each form of construction and finish required to comply with the following requirements, using materials indicated for the completed Work:

1. Build mockups in location and of size indicated or, if not indicated, as directed by the Resident Engineer.
2. Notify Resident Engineer seven (7) days in advance of dates and times when mockups will be constructed.
3. Demonstrate the proposed range of aesthetic effects and workmanship.
4. Obtain Design Consultant's approval of mockups before starting work, fabrication, or construction.
5. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.
6. Demolish and remove mockups when directed, unless otherwise directed or indicated.

1.7 QUALITY CONTROL:

A. City's Responsibilities: Where quality-control services are indicated as the City's responsibility in the Specifications, the City will engage a qualified testing agency to perform these services.

1. COST OF TESTS BORNE BY THE CITY: Where the City directs tests to be performed to determine compliance with the Specifications regarding materials or equipment, and where such compliance is ascertained as a result thereof, the City will bear the cost of such tests.
2. The City will furnish the Contractor with names, addresses, and telephone numbers of testing entities engaged and a description of the types of testing and inspecting they are engaged to perform.
3. Costs for retesting and re-inspecting construction that replaces or is necessitated by work that failed to comply with the Contract Documents will be charged to the Contractor.

B. Contractor's Responsibility: Tests and inspections not explicitly assigned to the City are the Contractor's responsibility. Unless otherwise indicated, the Contractor 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 Resident Engineer at least 72 hours in advance of the date and time for the performance of Work that requires testing or inspecting.
5. Where quality control services are indicated as Contractor's responsibility, the Contractor 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.

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. 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.

F. 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.

G. 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.

H. Inspection of Material: In the event that the Specifications require the Contractor to engage the services of an entity to witness and inspect any material especially manufactured or prepared for use in or part of the permanent construction, such entity 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.

I. No Shipping Before Inspection: The Contractor must comply with the foregoing before shipping any material.

J. 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.

K. 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.

L. 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.

M. Reports: Six (6) copies of the reports must be submitted and authoritative certification thereof must be furnished to the Commissioner as a prerequisite for the acceptance of any material or equipment.

N. Rejections: If, in making any test, it is ascertained by the Commissioner that the material or equipment does not comply with the Specifications, the Contractor will be notified thereof, and will be directed to refrain from delivering said materials or equipment, or to promptly remove it from the site or from the Work and replace it with acceptable material at no additional cost to the City.

O. Furnish Designated Materials: Upon rejection of any material or equipment submitted as the equivalent of that specifically named in the Specifications, the Contractor must immediately proceed to furnish the designated material or equipment.

1.8 APPROVAL OF MATERIALS:

A. Local Laws: All materials, appliances and types or methods of construction 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.

1.9 SPECIAL INSPECTIONS:

A. SPECIAL INSPECTIONS:

1. Inspection of selected materials, equipment, installation, fabrication, erection, or placement of components and connections made during the progress of the Work to ensure compliance with the Contract Documents and provisions of the 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.

1.10 INSPECTIONS BY OTHER CITY AGENCIES:

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.

1.11 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 Commissioner through the Resident Engineer.

1.12 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 Resident Engineer. Additional costs resulting from retesting, re-inspecting, replacing of material and/or damage to the Work and any delay caused to the schedule 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 – includes:
	New York City Energy Conservation Code (N.Y.C. E.C.C)
	New York City Plumbing Code (N.Y.C. P.C.)
	New York City Building Code (N.Y.C. P.C.)
	New York City Mechanical Code (N.Y.C. M.C.)
	New York City Fuel Gas Code (N.Y.C. F.G.C.)
N.Y.S.D.O.L	New York State Department of Labor
N.Y.C.D.E.P	New York City Department of Environmental Protection
N.Y.C.E.C.	New York City Electrical Code
N.Y.C.F.C	New York City Fire Code
N.Y.S...D.E.C.	New York State Department of Environmental Conservation
O.S.H.A.	Occupational Safety & Health Administration

1.4 INDUSTRY STANDARDS:

A. STANDARD REFERENCES – Unless otherwise specifically indicated in the Contract Documents, whenever reference is made to the furnishing of materials or testing thereof that conforms to the standards of any technical society, organization or body, it 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
AASHTO	American Association of State Highway and Transportation Officials
AATCC	American Association of Textile Chemists and Colorists (The)
ABAA	Air Barrier Association of America
ABMA	American Bearing Manufacturers Association
ACI	ACI International (American Concrete Institute)
ACPA	American Concrete Pipe Association
AEIC	Association of Edison Illuminating Companies, Inc. (The)
AF&PA	American Forest & Paper Association
AGA	American Gas Association
AGC	Associated General Contractors of America (The)
AGMA	American Gear Manufacturer Association
AHA	American Hardboard Association (Now part of CPA)
AHAM	Association of Home Appliance Manufacturers
AI	Asphalt Institute
AIA	American Institute of Architects (The)

AIEE	American Institute of Electrical Engineers
AISC	American Institute of Steel Construction
AISI	American Iron and Steel Institute
AITC	American Institute of Timber Construction
ALCA	Associated Landscape Contractors of America (Now PLANET - Professional Landcare Network)
ALSc	American Lumber Standard Committee, Incorporated
ALI	Automotive Lift Institute
AMCA	Air Movement and Control Association International, Inc.
ANSI	American National Standards Institute
AOSA	Association of Official Seed Analysts, Inc.
APA	APA - The Engineered Wood Association
APA	Architectural Precast Association
API	American Petroleum Institute
ARI	Air-Conditioning & Refrigeration Institute
ARMA	Asphalt Roofing Manufacturers Association
ASA	American Standards Association
ASAE	American Society of Agricultural Engineers
ASCE/SEI	American Society of Civil Engineers, Structural Engineering Institute
ASHRAE	American Society of Heating, Refrigerating and Air-Conditioning Engineers
ASME	American Society of Mechanical Engineers
ASSE	American Society of Sanitary Engineering
ASTM	ASTM International (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	BICSI
BIFMA	BIFMA International (Business and Institutional Furniture Manufacturer's Association International)
BISSC	Baking Industry Sanitation Standards Committee
CIBSE	Charted Institute of Building Services Engineers
CCC	Carpet Cushion Council
CDA	Copper Development Association
CEA	Canadian Electricity Association
CFFA	Chemical Fabrics & Film Association, Inc.
CGA	Compressed Gas Association
CGSB	Canadian General Standards Board
CIMA	Cellulose Insulation Manufacturers Association
CIPRA	Cast Iron Pipe Research Association
CISCA	Ceilings & Interior Systems Construction Association
CISPI	Cast Iron Soil Pipe Institute
CLFMI	Chain Link Fence Manufacturers Institute
CPA	Composite Panel Association
CPPA	Corrugated Polyethylene Pipe Association

CPSC	Consumer Product Safety Commission
CRI	Carpet & Rug Institute (The)
CRSI	Concrete Reinforcing Steel Institute
CSA	Canadian Standards Association
CSI	Cast Stone Institute
CSI	Construction Specifications Institute (The)
CSSB	Cedar Shake & Shingle Bureau
CTI	Cooling Technology Institute (Formerly: Cooling Tower Institute)
DASMA	Door and Access Systems Manufacturer's Association International
DHI	Door and Hardware Institute
DOC	U.S. Department of Commerce – National Institute of Standards and Technology
EIA	Electronic Industries Alliance
DOJ	U.S. department of Justice
EIMA	EIFS Industry Members Association
DOL	U.S. Department of labor
EJCDC	Engineers Joint Contract Documents Committee
DOTn	U.S. Department of Transportation
EN	European Committee of Standards
EJMA	Expansion Joint Manufacturers Association, Inc.
ESD	ESD Association
EVO	Efficiency Valuation Organization
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
ILI	Indiana Limestone Institute of America, Inc.
ISO	International Organization for Standardization
ISSFA	International Solid Surface Fabricators Association
ITS	Intertek
ITU	International Telecommunication Union
KCMA	Kitchen Cabinet Manufacturers Association
LMA	Laminating Materials Association (Now part of CPA)
LPI	Lightning Protection Institute
MBMA	Metal Building Manufacturers Association
MFMA	Maple Flooring Manufacturers Association, Inc.
MFMA	Metal Framing Manufacturers Association
MH	Material Handling (Now MHIA)
MHIA	Material Handling Industry of America
MIA	Marble Institute of America
MPI	Master Painters Institute
MSS	Manufacturers Standardization Society of The Valve and Fittings Industry Inc.

NAAMM	National Association of Architectural Metal Manufacturers
NACE	NACE International (National Association of Corrosion Engineers International)
NADCA	National Air Duct Cleaners Association
NAGWS	National Association for Girls and Women in Sport
NAIMA	North American Insulation Manufacturers Association
NBGQA	National Building Granite Quarries Association, Inc.
NCAA	National Collegiate Athletic Association (The)
NCMA	National Concrete Masonry Association
NCPI	National Clay Pipe Institute
NCTA	National Cable & Telecommunications Association
NEBB	National Environmental Balancing Bureau
NECA	National Electrical Contractors Association
NeLMA	Northeastern Lumber Manufacturers' Association
NEMA	National Electrical Manufacturers Association
NETA	InterNational Electrical Testing Association
NFHS	National Federation of State High School Associations
NFPA	NFPA (National Fire Protection Association)
NFRC	National Fenestration Rating Council
NGA	National Glass Association
NHLA	National Hardwood Lumber Association
NLGA	National Lumber Grades Authority
NIS	National Institute of Standards and Technology
NOFMA	NOFMA: The Wood Flooring Manufacturers Association (Formerly: National Oak Flooring Manufacturers Association)

NRCA	National Roofing Contractors Association
NRMCA	National Ready Mixed Concrete Association
NSF	NSF International (National Sanitation Foundation International)
NSSGA	National Stone, Sand & Gravel Association
NTMA	National Terrazzo & Mosaic Association, Inc. (The)
NTRMA	National Tile Roofing Manufacturers Association (Now TRI)
NWWDA	National Wood Window and Door Association (Now WDMA)
OPL	Omega Point Laboratories, Inc. (Acquired by ITS - Intertek)
PCI	Precast / Pre-stressed Concrete Institute
PDCA	Painting & Decorating Contractors of America
PDI	Plumbing & Drainage Institute
PGI	PVC Geomembrane Institute
PLANET	Professional Landcare Network (Formerly: ACLA - Associated Landscape Contractors of America)
PPS	Power Piping Society
PTI	Post-Tensioning Institute
RCSC	Research Council on Structural Connections
RFCI	Resilient Floor Covering Institute
RIS	Redwood Inspection Service
RMI	Rack Manufacturers Institute
RTI	(Formerly: NTRMA - National Tile Roofing Manufacturers Association) (Now TRI)
SAE	SAE International
SCAQMD	South Coast Air Quality Management District
SCS	Scientific Certification System

SDI	Steel Deck Institute
SDI	Steel Door Institute
SEFA	Scientific Equipment and Furniture Association
SGCC	Safety Glazing Certification Council
SHBI	Steel Heating Boiler Institute
SIA	Security Industry Association
SIGMA	Sealed Insulating Glass Manufacturers Association (Now IGMA)
SJI	Steel Joist Institute
SMA	Screen Manufacturers Association
SMACNA	Sheet Metal and Air Conditioning Contractors' National Association
SMPTE	Society of Motion Picture and Television Engineers
SPFA	Spray Polyurethane Foam Alliance (Formerly: SPI/SPFD - The Society of the Plastics Industry, Inc.; Spray Polyurethane Foam Division)
SPIB	Southern Pine Inspection Bureau (The)
SPRI	Single Ply Roofing Industry
SSINA	Specialty Steel Industry of North America
SSPC	SSPC: The Society for Protective Coatings
STI	Steel Tank Institute
SWI	Steel Window Institute
SWRI	Sealant, Waterproofing, & Restoration Institute
TCA	Tile Council of America, Inc.
TIA/EIA	Telecommunications Industry Association/Electronic Industries Alliance
TMS	The Masonry Society
TPI	Truss Plate Institute, Inc.

TPI	Turfgrass Producers International
TRI	Tile Roofing Institute (Formerly: RTI - Roof Tile Institute)
UL	Underwriters Laboratories Inc.
ULC	Underwriters Laboratories of Canada
UNI	Uni-Bell PVC Pipe Association
USAV	USA Volleyball
USC	United States Code
USGBC	U.S. Green Building Council
USITT	United States Institute for Theatre Technology, Inc.
WASTEC	Waste Equipment Technology Association
WCLIB	West Coast Lumber Inspection Bureau
WCMA	Window Covering Manufacturers Association (Now WCSC)
WCSC	Window Covering Safety Council (Formerly: WCMA - Window Covering Manufacturers Association)
WDMA	Window & Door Manufacturers Association (Formerly: NWWDA - National Wood Window and Door Association)
WI	Woodwork Institute (Formerly: WIC - Woodwork Institute of California)
WIC	Woodwork Institute of California (Now WI)
WMMPA	Wood Moulding & Millwork Producers Association
WRI	Wire Reinforcement Institute, Inc.
USEPA	United States Environmental Protection Agency
WSRCA	Western States Roofing Contractors Association
WWPA	Western Wood Products Association

PART II – PRODUCTS (Not Used)

PART III – EXECUTION (Not Used)

END OF SECTION 01 42 00

(No Text on This Page)

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.

Term	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 tap-dispenser 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:

1. The Contractor must provide temporary single-occupant toilet units of the chemical, aerated re-circulation, 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 ¼ horsepower may be taken from the existing electric distribution system if the existing system is of adequate capacity for the temporary power load. The Contractor 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.

6. 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.

2) Post Enclosure: Once the Commissioner determines that the building, or any portion thereof, has been enclosed, as set forth in sub-section 3.5 B, the Contractor is responsible for the provision of Temporary Heat by one or more of the following means: 1) by an existing heating system (if any), 2) by a permanent heating system which is being installed as part of the Project, or 3) by a temporary heating system(s).

3) The Contractor 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 Contractors, including punch list Work, unless directed otherwise in writing by the Commissioner. The responsibility of the Contractor provided for herein is subject to the exception set forth in sub-section 3.5 A.2 (b) herein.

b. Projects not involving enclosure of the building:

1) If the Project involves the installation of a new permanent heating system if one did not exist previously, or the replacement, modification, and/or shut down of the existing permanent heating system, or any key component thereof, the Contractor will be responsible for the provision of Temporary Heat, except as otherwise provided in sub-section 3.5 H.3(b).2 herein.

2) If the Project does not involve the installation of a new permanent heating system if one did not exist previously, or the replacement, modification, and/or shut down of the existing permanent heating system, or any key component thereof, there is no Contractor responsibility of the provision of Temporary Heat, unless otherwise specified in the Contract Documents. However, if the Commissioner, pursuant to sub-section 3.5 H.3 (b).1 herein, determines that the provision of Temporary Heat is necessary due to special and/or unforeseen circumstances, the Contractor 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.

2. 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.

a. DDC Managed Project Trailer: DDC Field Office Trailer Size, Layout and Computer Workstation:

1) Overall length: 32 Feet
Overall width: 10 Feet
2) Interior Layout:
Provide one (1) general office/conference room area and one (1) private office at one end of the trailer. Provide equipment and amenities as specified in sub-section 3.8.B herein.

3) Computer Workstation: Provide one (1) complete computer workstation, as specified in sub-section 3.8.D herein, in the private office area as directed by the Resident Engineer.

b. CM Managed Project Trailer: DDC Field Office Trailer Size, Layout and Computer Workstation:

1) Overall length: 50 Feet
Overall width: 10 Feet
2) Interior Layout:
Provide one (1) large general office/conference room in the center of the trailer and two (2) private offices, one (1) each at either end of the trailer. Provide equipment and amenities as specified in sub-section 3.8.B herein.
3) Computer Workstation:

Provide three (3) complete computer workstations as specified in sub-section 3.8.D herein. Provide one (1) each complete computer workstation in each private office and one (1) complete computer workstation at the secretarial position as directed by the Resident Engineer.

4. The exterior of the trailer 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

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:

    a. Two (2) single pedestal desks, 42" x 32"; two (2) swivel chairs with arms and three (3) side chairs without arms to match desk. Two (2) full ball bearing suspension four (4) drawer vertical legal filing cabinets with locks and two (2) full ball bearing two (2) drawer vertical legal filing cabinets in each private office located below built-in desk.

    b. One (1) folding conference table, 96” x 30” and ten (10) folding chairs.

    c. Three (3) metal wastebaskets.

    d. One (1) fire extinguisher one (1) quart vaporizing liquid type, brass, wall mounted by Pyrene No. C21 or approved equal.

    e. One (1) Crystal Springs water cooler with bottled water, Model No. LP14058 or approved equal to be furnished for the duration of the Contract as required.

13. TRAILER TEMPORARY SERVICE: Plumbing and electrical Work required for the trailer will be furnished and maintained as below.

    a. PLUMBING WORK: The Contractor 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 sub-section 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.

    b. ELECTRICAL WORK:

       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

1) 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 Contractors 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 sub-section 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:

      1) 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.

g) I/O Ports: Must have at least one (1) Serial Port, one (1) Parallel Port, and three (3) USB Ports.

h) Video Display Card: HD Graphics (VGA, HDMI) with a minimum of 64 MB of RAM.

i) Monitor: 22" W, 23.0 Inch VIS, Widescreen, VGA/DVI LCD Monitor.

j) Available Exp. Slots: System as configured above must have at least two (2) full size PCI Slots available.

k) Network Interface: Integrated 10/100/1000 Ethernet card.

l) Other Peripherals: Optical scroll Mouse, 101 Key Keyboard, Mouse Pad and all necessary cables.

m) Software Requirement: Microsoft Windows 7 Professional SP1, 32 bit; Microsoft Office Professional 2010 or 2013; Microsoft Project 2010; Adobe Acrobat reader; Anti-Virus software package with 2 year updates subscription; and, either Auto Cad LT or Microsoft Visio Standard Edition, as directed by the Resident Engineer.

4) DDC Field Office Specs: DDC Field Offices requiring computers 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. ABC1234@gmail.com).

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 fire-retardant plywood on construction operations side.

2. Construct dustproof partitions with 2 layers of 3-mil (0.07-mm) polyethylene sheet on each side. Cover floor with 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.
5. 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:

1. 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.

   b. 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 sub-section 3.17.A above for the Project sign. A color match print proof from the sign manufacturer of the rendering sign printed from the supplied file is to be submitted to DDC for approval before fabrication. The rendering sign is to be posted at the same height as the Project sign. Where possible, the rendering sign 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 (12^{th}) 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 (12^{th}) floor slab, or that portion of it surrounding the elevator shaft, has been placed and stripped, the following Work must have been completed:

1. The shaft must be completely enclosed up to the twelfth (12^{th}) 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 (11^{th}) 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 (9^{th}) 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 (12^{th}) 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 DOB-approved 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 **all** scaffold(s) and shed(s) must include, at a minimum:

1. Plan(s);
2. Elevation(s);
3. Duty load designation: “standard” (150 psf live load) or “heavy duty” (300 psf live load);
4. Details including base support, anchors and ties;
5. Notes and specifications including load limits, number of planked levels, tie spacing, netting, and sequence of installation and removal;
6. Anchorage into sound material;
7. Load limits based on pull tests;
8. Specifications for pull test(s), method, proof load and the number of trials;
9. Elevations, levels or heights, where anchorage is made into masonry;
10. Specifications for frames, planks, screw jacks, anchors, and any other ancillary hardware;
11. Samples for anchors, ties and netting;
12. Sequence of operations for erection and demolition;
13. Location plan, heights, widths, “jumps” over doorways and driveways;
14. Specify size, maximum span and maximum spacing of headers and stringers;
15. Specify legs, girts, braces, nailing and connections; 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

(No Text on This Page)

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.

Term	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.

Term	**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.
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. 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. 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 in order to minimize disposal costs. There are numerous opportunities to sell, Salvage, or to donate materials and accrue tax benefits (which would accrue to the Contractor); there are also outlets that will pick up, and in some cases, buy Recyclable materials. Examples of information resources are as follows:

1. DDC's Sustainable Design website: https://www1.nyc.gov/site/ddc/about/sustainable-design.page. A standard Construction and Demolition (C&D) Waste Management Log form is included at the end of this section.
2. Web Resources (information only; no warranty or endorsement is implied):
    a. www.wastematch.org – Website of New York Waste Match, a materials exchange database and service.
    b. www.bignyc.org – Website of Build It Green NYC, a non-profit outlet for Salvaged and surplus building materials.
    c. www.usgbc.org – Website of the United States Green Building Council, with a description of the LEED certification process and requirements for C&D Waste Recycling.
    d. http://www.epa.gov/epawaste/index.htm – Website of the U.S. Environmental Protection Agency (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. www.ec.europa.eu/environment/waste/framework/index.htm – European Commission Waste Framework Directive 2008/98/EC.
    b. http://www.europa.eu/legislation_summaries/environment/waste_management – European Commission Waste Incineration Directive 2000/76/EC.
    c. www.cen.eu/cen/Products – 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 materials targeted for Reuse, Salvage, or Recycling, and names, addresses, and phone numbers of receiving facilities/companies that will be purchasing or accepting each material.

2. Description of on-Site and/or off-Site sorting methods for all materials to be removed from Site.
3. 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.
4. Landfill information: Names of landfills where non-Recyclable/reusable/salvageable Waste will be disposed, and list of applicable tipping fees.
5. 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.
6. Transportation: A description of the means of transportation and destination for Recycled materials.
7. 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.
8. 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 category;
   d. Total quantity of Waste, in tons/cubic yards, by type;
   e. Quantity of Waste Salvaged, Recycled and/or Reused, by type;
   f. Total quantity of Waste diverted from landfill (Recycled, Salvaged, Reused) as a percentage of total Waste; and
   g. Recipient of each material type.
3. Provide monthly and cumulative Project totals of Waste, quantity diverted, and percentage diverted.
4. Note that the unit of 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.
2. Inspect containers and bins for contamination and remove contaminated materials if found.
3. Comply with the General Conditions for controlling dust and dirt, environmental protection, and noise control.

3.2 ADDITIONAL DEMOLITION AND SALVAGE REQUIREMENTS:

A. Demolition and Salvage of additional items indicated in other sections of the Project Specifications require special attention as part of the overall 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

Department of Design and Construction

CONSTRUCTION AND DEMOLITION WASTE MANAGEMENT LOG

Project Name: _____
Project I.D.: _____

Contractor: _____
Prepared by: _____
For Month: _____

Haul Date	Ticket #	Hauling Company	*Material Category[2]	Material Quantity (tons or cubic yards)[1]				*Material Recipient
				*Total Weight	Excluded Material[3]	*Diverted Material[4]	*Landfilled Material	
				*Total		*Diverted	*Landfilled	
			Monthly Totals					
			% Diverted this Month*					
			Cumulative Totals					
			% Diverted to Date					

Notes:

1. Volume (cubic yards) may be used instead of weight if used for ALL amounts and ALL materials.
2. Includes concrete; bricks; concrete masonry units (CMU); asphalt; metals; clean dimensional wood; carpet and pad; drywall; ceiling tiles; cardboard, paper, and packaging; and any other Reuse items indicated on the 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.

* These items must be listed in order to receive LEED credit.

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. 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 & 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.

Term	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, spare parts, extra stock and similar items.

6. Complete final clean-up requirements including touch-up painting of marred surfaces.

7. Submit final meter readings for utilities, as applicable, a measured record of stored fuel, and similar data as of the date when the City took possession of and assumed responsibility for corresponding elements of the Work.

B. Final Inspection: The Contractor 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.

l. Touch up and otherwise repair and restore marred, exposed finishes and surfaces. Replace finishes and surfaces that cannot be satisfactorily repaired or restored or that already show evidence of repair or restoration.

1) Do not paint over "UL" and similar labels, including mechanical and electrical nameplates.

m. Wipe surfaces of mechanical and electrical equipment and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.

n. Replace parts subject to unusual operating conditions.

o. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.

p. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.

q. Clean ducts, blowers, and coils if units were operated without filters during construction.

r. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency. Replace burned-out bulbs, and those noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.

s. Leave Project clean and ready for occupancy.

t. Construction Waste Disposal: Comply with waste disposal requirements in Section 01 74 19, CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL.

C. Pest Control: Engage an experienced, licensed exterminator to make a final inspection and rid Project of rodents, insects, and other pests, as required in Section 01 50 00, TEMPORARY FACILITIES,SERVICES AND CONTROLS. Prepare and submit a pest control report to the Commissioner.

D. Comply with 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.
7. 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, spare parts, extra materials, and similar items to location designated by Resident Engineer. Label with manufacturer's name and model number where applicable.
10. Make final changeover of permanent locks and deliver keys to the Resident Engineer. Advise Commissioner of changeover in security provisions.
11. Complete startup testing of systems as applicable.
12. Submit approved test/adjust/balance records.
13. Terminate and remove temporary facilities from Project Site, along with mockups, construction tools, and similar elements as directed by the Resident Engineer.
14. If applicable, complete Commissioning requirements as defined in Section 01 91 13, GENERAL COMMISSIONING REQUIREMENTS 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 Mylars (reproducible) pertaining to the Work to be performed under the Contract. It is the responsibility of the Contractor to modify the Contract Drawings to indicate all changes and corrections, if any, occurring in the Work as actually installed. The Contractor is required to furnish all other Mylar (reproducible) drawings, if necessary, such as Addenda Drawings and Supplementary Drawings as may be necessary to indicate all Work in detail as actually completed. All professional seals must be blocked out. Title box complete with Project title and Design Consultants' names will remain.

C. Maintenance of Documents and Samples: The Contractor must maintain, during the progress of the Work, an accurate record of the Work as actually installed, on Contract Record Drawings Mylars in ink (reproducible). 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.

1.3 RELATED SECTIONS: include without limitation the following:

A.	Section 01 10 00	SUMMARY
B.	Section 01 32 00	CONSTRUCTION PROGRESS DOCUMENTATION
C.	Section 01 32 33	PHOTOGRAPHIC DOCUMENTATION
D.	Section 01 33 00	SUBMITTAL PROCEDURES
E.	Section 01 77 00	PROJECT CLOSEOUT PROCEDURES

1.4 DEFINITIONS:

A. Refer to Article 2 of the Contract for definition of terms, words and expressions used in the General Conditions not otherwise defined herein.

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.
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:

A. As-Built Contract Record Drawings: The Contractor must comply with the following:

1. Progress Submission: As directed by the Resident Engineer, submit progress as-built Contract 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 Mylar (reproducible) as-built Contract Record Drawings, in ink indicating all of the Work and locations as actually installed, plus one (1) set of paper prints which will be furnished to the sponsoring agency by DDC.

3. As-built Contract Record Drawings 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 (l/2) inch high, and contain the following data:

AS-BUILT CONTRACT RECORD DRAWING

Contractor's Name		_____
Contractor's Address		_____
Subcontractor's Name (where applicable)		_____
Subcontractor's Address		_____
Made by:	Date	_____
Checked by:	Date	_____

Commissioner's Representatives	
(Resident Engineer)	DDC
(Plumbing Inspector)	DDC
(Heating & Ventilating Inspector)	DDC
(Electrical Inspector)	DDC

5. 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 negatives of the completed Work as described in Section 01 32 33, PHOTOGRAPHIC DOCUMENTATION.

E. Operating and Maintenance Manuals:

1. Submit three (3) copies each of preliminary manuals to the Resident Engineer for review and approval. The Contractor 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, 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 Mylar's (reproducible): 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 full set of Mylar's (reproducible) and submit one (1) blue line or black line record copy to the Resident Engineer. The marked-up Mylar's (reproducible) must be retained by the Contractor for completion of mark-up and final submission.

D. Final Contract Record Mylar's (reproducible): Immediately before final inspection for 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 Mylar drawings (reproducible) of the Contract Drawings.

1. Incorporate changes and additional information previously marked on Record Prints. Erase, redraw, and add details and notations where applicable.
2. Refer instances of uncertainty to Resident Engineer for resolution.
3. Print the as-built Contract Record Drawings and Shop Drawings for use as record transparencies as described in Sub-Section 1.5.

2.2 RECORD SPECIFICATIONS, ADDENDA AND CHANGE ORDERS:

A. Preparation: Mark Specifications to indicate the actual product installation where installation varies from that indicated in Specifications, Addenda, and Contract modifications.

1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
2. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
3. Record the name of manufacturer, supplier, installer, and other information necessary to provide a record of selections made.
4. For each principal product, indicate whether record product data has been submitted in operation and maintenance manuals instead of submitted as record product data.
5. Note related change orders and 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 DVD 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 _____

TO _____

The Contractor hereby guarantees that the Work specified under the above section of the aforesaid Contract will be free from defects of material and/or workmanship, for the period indicated above.

The Contractor also guarantees that it will promptly repair, restore, rebuild or replace whichever may be deemed necessary by the City, any or all defective material or workmanship of the aforementioned section, that may appear within the guaranty period and any finished Work to which damage may occur because of such defects, to the satisfaction of the City and without any cost or expense to the City.

The Contractor hereby agrees to pay to the City the cost of the repairs or replacements should the City make the same because of the failure of the Contractor to do so.

Contractor: _____

By: _____
Signature of Partner or Corporate Officer

Print Name: _____

Subscribed and sworn to before me this
day of _____ , year _____

_____
Notary Public

2.10 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 LEED MATERIALS AND MATRIX:

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.

2.12 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

(No Text on This Page)

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;
   l. 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

PART I – GENERAL

1.1 RELATED DOCUMENTS:

A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 SUMMARY:

A. LEED BUILDING - GENERAL REQUIREMENTS**:**

The City of New York is committed to implementing good environmental practices and procedures which include achieving a LEED™ Green Building rating. Specific project requirements related to this goal are listed in the applicable paragraphs of this section of the General Conditions. The Contractor 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
B.	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.

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).

      1) For each product with recycled content, also indicate the total recycled content value (1/2 x pre-consumer percentage x product value + 1 x post-consumer percentage x product value = total recycled content value).
      2) See additional requirements for concrete below.

   c. Identification (Yes/No) of materials manufactured within 500 miles of the project site AND containing raw materials harvested or extracted within 500 miles of the project site.

      1) Indicate the percentage by weight, relative to the total weight of the product that meets these criteria.
      2) Indicate the point of harvest/extraction/recovery of regional raw materials, the point of final assembly of regional manufactured products, and the distance from each point to the project site.

d. Volatile Organic Compound (VOC) content of all field-applied adhesives, sealants, paints, and coatings, listed in grams/liter or lbs./gallon, less water.

1) For detailed requirements refer to Section 01 81 13.13 VOC LIMITS FOR ADHESIVES, SEALANTS, PAINTS AND COATINGS.

e. The amount of “Forest Stewardship Council (FSC) Certified” wood products if used in the Project.

1) Record only new FSC-certified wood products. Do not record reclaimed, salvaged, or recycled FSC-certified wood products.
2) Reclaimed, salvaged, or recycled FSC-certified wood may be recorded as post-consumer recycled content.

f. The amount of Rapidly Renewable materials if used in the Project.

1) Indicate the type of rapidly renewable material used, and the percentage by weight, relative to the total weight of the product, that consists of rapidly renewable material.

g. The percentage (by weight), relative to the total weight of cementitious materials, of supplementary cementitious materials or pozzolans such as fly ash used in each concrete mix used in the Project.

1) For each concrete mix, provide a complete breakdown of all components, by weight and by cost.

h. Identification (Yes/No) of composite wood or agrifiber products used in the project that are free of added urea-added formaldehyde resins.

i. Identification (Yes/No) of flooring products used in the project that have Carpet and Rug Institute (CRI) Green Label or Green Label Plus certification, or Resilient Floor Covering Institute FloorScore certification.

1) Untreated solid wood flooring, and mineral-based flooring products such as tile, masonry, terrazzo, and cut stone that have no organic-based coatings or sealants, are excluded from this requirement.

j. The EBMCF 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 ≤ 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

ENVIRONMENTAL BUILDING MATERIALS CERTIFICATION FORM

Contractor Name: _____
Contractor Contact: _____
Telephone Number: _____

Project Name: _____
Project I.D.: _____

Product/Manufacturer	Material Cost[1]	Recycled Content			Regional[4]			Rapidly Renewable[7]		VOC content[8]		Flooring[9]	Wood	
		Pre-Consumer (% by wt)[2]	Post-Consumer (% by wt)[3]	Total % (½ Pre + Post)	Location & Distance to Extraction[5]	Location & Distance to Manufacture[6]	Extracted & Manuf. (% by wt)	Material	% by wt	*VOC content listed	*VOC content allowed	*Green Label or FloorScore	*Added urea formaldehyde (Yes/No) [10]	FSC Certified[11] (% by wt)

[1] Material Cost: As it appears on the manufacturer's or distributor's invoice to the contractor or subcontractor. Does not include labor or equipment costs associated with installation.

[2] Pre-Consumer Recycled Content: Industrial/manufacturing waste material (e.g., fly-ash and synthetic gypsum, both waste products from coal burning electricity plants) diverted from landfill and incorporated into a finished product. Scrap raw materials that can be reused in the same manufacturing process from which they are recovered are not considered Pre-Consumer Recycled Content.

[3] Post-Consumer Recycled Content: Material or product that has served its intended consumer use (e.g., an empty plastic bottle) and has been diverted from landfill and incorporated into a finished product.

[4] Regional: Refers to a material/product that is BOTH extracted AND manufactured within 500 miles of the Project site. Record this information ONLY for materials/products meeting BOTH of these criteria.

[5] Extraction: Refers to the location from which the raw resources used in a building product are extracted, harvested, or recovered.

[6] Manufacture: Refers to the location of the final assembly of components into a building product that is furnished and installed by the Contractor.

[7] Rapidly Renewable: Refers to materials/products derived from agricultural products that are typically harvested within a ten-year or shorter cycle.

[8] VOC Content: The quantity of volatile organic compounds contained in adhesives, sealants. paints and architectural coatings. Reported in grams/liter or lbs/gallon, less water.

[9] Flooring: For carpet, indicate Carpet and Rug Institute (CRI) Green Label Plus certification. For carpet cushion, indicate CRI Green Label certification. For all flooring except unfinished/untreated wood and mineral-based flooring (tile, masonry, terrazzo, cut stone) without organic-based coatings or sealants, indicate Resilient Floor Covering Institute FloorScore rating. VOC limits for adhesives, sealants, etc. still apply.

[10] Added Urea Formaldehyde: Applies to composite wood and agrifiber products only (plywood, particleboard, MDF, OSB, wheatboard, strawboard). Resins or binders with added urea formaldehyde are prohibited.

[11] FSC Certified: Certification from the Forest Stewardship Council. This column is only applicable to wood products.

* Applies only to materials/products installed within the weather barrier.

Contractor Certification:

I, _____ a duly authorized representative of_____ (the Contractor) hereby certify that the material information contained herein is an accurate representation of the material qualifications to be provided by the Contractor as components of the final building construction. Furthermore, I understand that any change in such qualifications during the purchasing period will require prior written approval from the Commissioner.

Signature of Authorized Representative: _____ Date: _____

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

PART I – GENERAL

1.1 RELATED DOCUMENTS:

A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 SUMMARY:

A. LEED BUILDING - GENERAL REQUIREMENTS**:**

The City of New York is committed to implementing good environmental practices and procedures which include achieving a LEED™ Green Building rating. Specific Project requirements related to this goal are listed in the applicable paragraphs of this section of the General Conditions. The Contractor shall ensure that these requirements as defined in the sections below and in related sections of the Contract Documents, are implemented to the fullest extent. Substitutions, or other changes to the work proposed by the Contractor or their Subcontractors, shall not be allowed if such changes compromise the stated LEED BUILDING criteria.

B. This Section includes:

1. Definitions
2. LEED Provisions
3. LEED Building Submittals
4. LEED Building Submittal Requirements
5. LEED Action Plan
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, shall follow all requirements of this section. In the event of any conflict or inconsistency between this section and the Specifications regarding adhesives, sealant or sealant applications, paints, 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 shall prevail.

1.3 RELATED SECTIONS: Include without limitation the following:

A.	Section 01 74 19	CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL
B.	Section 01 81 19	INDOOR AIR QUALITY REQUIREMENTS FOR LEED BUILDINGS
C.	Section 01 91 13	GENERAL COMMISSIONING REQUIREMENTS FOR MEP SYSTEMS
D.	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.

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 I-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. 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	A. 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	A. 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 shall each contribute as a separate product.
Product-Specific Declaration	A. 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	A. 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 of manufacture for an assembly of components.
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 shall 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:

1. 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 shall be responsible for the completion of the Disclosure and Optimization Calculator, which can be found on USGBC's website. The Contractor shall 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 shall 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 sub-contractor's scope of work. Cost reporting shall 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).
        1) For each product with recycled content, also indicate the total recycled content value (1/2 x pre-consumer percentage x product value + 1 x post-consumer percentage x product value = total recycled content value).
        2) See additional requirements for concrete 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.
        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.
    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 post-consumer 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 CO_2e;
            ii. Depletion of the stratospheric ozone layer, in kg CFC-11;
            iii. Acidification of land and water sources, in moles H+ or kg SO_2;
            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 shall be responsible for the completion of the EQ Calculator, which can be found on USGBC's website. The Contractor shall 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 shall record information for all relevant products as outlined below. Include the following documentation. Detailed requirements are listed in b. – j. below.
      1) VOC content of all field-applied interior adhesives, sealants, paints, and coatings, listed in grams/liter or lbs./gallon, less water.
      2) 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.
      3) Composite Wood Evaluation for all composite wood not covered by other categories.

4) Furniture Evaluation for 90% of all furniture, by cost.
5) For schools/healthcare only: Exterior-Applied Products Evaluation for 90% of all exterior applied materials, measured by volume. All batt insulation products shall 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 shall comply with each applicable threshold requirement. Refer to LEED BD+C Reference Guide, EQ Credit Low-Emitting Materials for additional guidance.

1) 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, 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 shall contain any ingredients that are carcinogens, mutagens, reproductive toxins, persistent bioacculmulative compounds, hazardous air pollutants, or ozone-depleting compounds. An exception shall be made for titanium dioxide and, for products that are pre-tinted by the manufacturer, carbon black, which shall be less than or equal to 1% by weight of the product.
3) No product shall 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 shall 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:

	Allowable VOC Content (g/L):
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	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	510
CPVC welding	490
ABS welding	325
Plastic cement welding	250
Adhesive primer for plastic	550
Computer diskette manufacturing	350
Contact adhesive	80
Special purpose contact adhesive	250
Tire retread	100
Adhesive primer for traffic 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	30
Plastic foam substrate specific adhesives	50
Porous material (except wood) substrate specific adhesives	50
Wood substrate specific adhesives	30
Fiberglass substrate specific adhesives	80
Sealants:	
Architectural sealant	250
Marine deck sealant	760
Nonmember roof sealant	300
Roadway sealant	250
Single-ply roof membrane sealant	450
Other sealant	420
Sealant Primers:	
Architectural non-porous sealant primer	250
Architectural porous sealant primer	775

Modified bituminous sealant primer	500
Marine deck sealant primer	760
Other sealant primer	750
Other	
Other adhesives, adhesive bonding primers, adhesive primers or any other primers	250

2) For field applications that are inside the weatherproofing system, a minimum of 90 percent of adhesives and sealants, by volume, shall 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:

1) 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 coatings	50
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 coatings	420
Industrial maintenance coatings – Non-sacrificial anti-graffiti coatings	100
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 shall 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 shall 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 shall 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 shall be made with no added formaldehyde.

g. LOW-EMITTING MATERIALS, CEILINGS, WALLS, THERMAL, AND ACOUSTIC INSULATION: Ceilings, walls, and thermal and acoustic insulation shall 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, shall 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,

shall 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-EMITTING 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.

1) 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. 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.
   b. 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.
   c. 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.
   d. 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 shall 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 shall 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 shall 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 FSC-certified 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 shall be measured according to ASTM E 903, ASTM E 1918, or ASTM C 1549. Emittance shall be measured according to ASTM E 408 or ASTM C 1371. Vegetated roof surfaces are exempt from the SRI criteria.

   a. 82 for initial SRI, or 64 for 3-year aged SRI for low-sloped roofing applications (slope ≤ 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 shall not be installed in the Project. For healthcare projects only, probe-start metal halide HID lamps shall not be installed in any interior spaces.

   a. The mercury content or content range per lamp in milligrams or picograms, meeting the following criteria;

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

   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 shall not contain mercury, and shall 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 shall be assembled into one package per contract specification section(s) (or per subcontractor), and submitted in accordance with Section 01 33 00 SUBMITTAL PROCEDURES. Incomplete or inaccurate LEED Building Submittals may be used as the basis for the rejection of products or assemblies.

B. All final LEED Building Submittal information with back-up documentation shall 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 shall 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 shall 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 shall 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 shall implement the ESC Plan, coordinate the Plan with all affected trades, and designate one individual as the Erosion and Sedimentation Control Representative, who will be responsible for communicating the progress of the Plan with the Commissioner monthly, and for assembling the required LEED documentation.
   b. The Contractor shall be responsible for the provision, maintenance, and repair of all ESC measures. Any problems identified in site inspections shall be resolved in a timely manner.
   c. Demonstration. The Contractor shall provide on-site instruction of proper construction practices required to prevent erosion and sedimentation.
   d. All sub-contractors shall promptly notify the ESC Representative if damage to an ESC measure is observed.
   e. Meetings. Urgent or ongoing ESC issues shall 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 shall save such original documents for the life of the Project plus seven (7) years.

1.9 QUALITY ASSURANCE:

A. The Contractor shall implement all LEED Action Plans, coordinate the Plans and LEED Building Submittals with all affected trades, and designate one individual as the Sustainable Construction Representative at no additional cost to the City of New York, who will be responsible for communicating the progress of LEED activities with the Commissioner monthly, and for assembling the required LEED documentation. The Contractor shall facilitate measurements taken by authorized parties on site for LEED compliance verification purposes.

B. Responsibilities of Contractor's Subcontractors: The Contractor shall be responsible for his/her subcontractors complying with the LEED Action Plans and for providing required LEED documentation as required for the Project.

C. Distribution and Compilation: The Contractor shall be responsible for distributing the 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 shall also be 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 shall 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: http://www.dec.ny.gov/docs/water_pdf/2016nysstanec.pdf

B. 2012 EPA Construction General Permit: https://www.epa.gov/npdes/epas-2012-construction-general-permit-cgp-and-related-documents

C. South Coast Air Quality Management District (SCAQMD), Rule 1168: www.aqmd.gov

D. South Coast Air Quality Management District (SCAQMD), Rule 1113: www.aqmd.gov

E. CDPH Standard Method v1.1-2010: www.cal-iaq.org

F. ISO 17025: www.iso.org

G. ISO Guide 65: www.iso.org

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: bifma.org

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): iso.org

L. ISO 14025–2006, Environmental labels and declarations (Type III Environmental

M. Declarations—Principles and Procedures): iso.org

N. ISO 14040–2006, Environmental management, Life cycle assessment principles, and frameworks: iso.org

O. ISO 14044–2006, Environmental management, Life cycle assessment requirements, and guidelines: iso.org

P. International Standard ISO 21930–2007 Sustainability in building construction—Environmental declaration of building products: iso.org

Q. Federal Trade Commission, Guides for the Use of Environmental Marketing Claims, 16 CFR 260.7 (e): ftc.gov/bcp/grnrule/guides980427.htm

R. Global Reporting Initiative (GRI) Sustainability Report: globalreporting.org/

S. Organisation for Economic Co-operation and Development (OECD) Guidelines for Multinational

T. Enterprises: oecd.org/daf/internationalinvestment/guidelinesformultinationalenterprises/

U. U.N. Global Compact, Communication of Progress: unglobalcompact.org/cop/

V. ISO 26000—2010 Guidance on Social Responsibility: iso.org/iso/home/standards/iso26000.htm

W. Forest Stewardship Council: ic.fsc.org

X. Sustainable Agriculture Network: sanstandards.org

Y. The Rainforest Alliance: rainforest-alliance.org/

Z. ASTM Test Method D6866: astm.org/Standards/D6866.htm

AA. Chemical Abstracts Service: cas.org/

BB. Health Product Declaration: hpdcollaborative.org/

CC. Cradle-to-Cradle CertifiedCM Product Standard: c2ccertified.org/product_certification

DD. Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH): echa.europa.eu/support/guidance-on-reach-and-clp-implementation

EE. GreenScreen: https://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 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

PART I – GENERAL

1.1 RELATED DOCUMENTS:

A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum, and (5) the Contract [City of New York Standard Construction Contract].

1.2 SUMMARY:

A. This Section includes requirements for volatile organic compound (VOC) content in adhesives, sealants, paints and coatings used for the project.

B. All sections in the Project Specifications with adhesives, sealant or sealant primer applications, paints and coatings 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:

A. Section 01 10 00 SUMMARY
B. Section 01 31 00 PROJECT MANAGEMENT AND COORDINATION
C. Section 01 32 00 CONSTRUCTION PROGRESS DOCUMENTATION
D. Section 01 33 00 SUBMITTAL PROCEDURES
E. Section 01 73 00 EXECUTION
F. Section 01 77 00 CLOSEOUT PROCEDURES
G. Section 01 78 39 CONTRACT RECORD DOCUMENTS
H. Section 01 81 13 SUSTAINABLE DESIGN REQUIREMENTS FOR LEED v3 BUILDINGS
I. Section 01 81 19 INDOOR AIR QUALITY FOR LEED BUILDINGS

1.4 DEFINITIONS:

A. Refer to Article 2 of the Contract for definition of terms, words and expressions used in the General Conditions not otherwise defined herein.

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. A. Lacquer: Clear/semi-transparent coating formulated with cellulosic or synthetic resins to dry by evaporation without chemical reaction and provide a solid, protective film. B. Sanding Sealer: A sanding sealer that also meets the definition of a lacquer. C. 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. 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. 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. 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, www.aqmd.gov

B. Rule 1113 - “Architectural Coatings”, amended 9 July 2004: South Coast Air Quality Management District (SCAQMD), State of California, www.aqmd.gov

C. Green Seal Standard GS-11- “Paints”, of Green Seal, Inc., Washington, DC, www.greenseal.org

D. Green Seal Standard GC-03- “Anti-Corrosive Paints”, of Green Seal, Inc., Washington, DC, www.greenseal.org

1.7 VOC REQUIREMENTS FOR INTERIOR ADHESIVES, SEALANTS, PAINTS AND COATINGS:

A. GENERAL: Unless otherwise specified herein, the VOC content of all interior adhesives, sealants, paints and coatings (herein referred to as “products”) must not be in excess of **250 grams per liter.**

B. No product shall contain any ingredients that are carcinogens, mutagens, reproductive toxins, persistent bioacculmulative compounds, hazardous air pollutants, or ozone-depleting compounds. An exception must be made for titanium dioxide and, for products that are pre-tinted by the manufacturer, carbon black, which shall be less than or equal to 1% by weight of the product.

C. No product 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
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 shall not exceed the limits defined in Rule 1168 – "Adhesive and Sealant Applications" of the South Coast Air Quality Management District (SCAQMD), of the State of California.

B. The VOC limits defined by SCAQMD are as follows. All VOC limits are defined in grams per liter, less water and less exempt compounds.

C. For specified building construction related applications, the allowable VOC content is as follows:

1. Architectural Applications**:**

a.	Indoor carpet adhesive	50
b.	Carpet pad adhesive	50
c.	Wood flooring adhesive	100
d.	Rubber floor adhesive	60
e.	Subfloor adhesive	50
f.	Ceramic tile adhesive	65
g.	VCT and asphalt tile adhesive	50
h.	Drywall and panel adhesive	50
i.	Cove base adhesive	50
j.	Multipurpose construction adhesive	70
k.	Structural glazing adhesive	100

2. Specialty Applications:

a.	PVC welding	510

b.	CPVC welding	490
c.	ABS welding	325
d.	Plastic cement welding	250
e.	Adhesive primer for plastic	550
f.	Contact Adhesive	80
g.	Special Purpose Contact Adhesive	250
h.	Structural Wood Member Adhesive	140
i.	Sheet Applied Rubber Lining Operations	850
j.	Top and Trim Adhesive	250

3. Substrate Specific Applications:

a.	Metal to metal	30
b.	Plastic foams	50
c.	Porous material (except wood)	50
d.	Wood	30
e.	Fiberglass	80

4. Aerosol Adhesives:

a.	General purpose mist spray	65% VOC's by weight
b.	General purpose web spray	55% VOC's by weight
c.	Special purpose aerosol adhesives (all types)	70% VOC's by weight

1.9 VOC REQUIREMENTS FOR INTERIOR SEALANTS:

A. The volatile organic compound (VOC) content of sealants, or sealant primers used in this project 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.

B. The VOC limits defined by SCAQMD are as follows. All VOC limits are defined in grams per liter, less water and less exempt compounds.

1. Sealants:

a.	Architectural	250
b.	Non-membrane roof	300
c.	Roadway	250
d.	Single-ply roof membrane	450
e.	Other	420

2. Sealant Primer:

a.	Architectural – Nonporous	250
b.	Architectural – Porous	775
c.	Other	750

1.10 VOC REQUIREMENTS FOR INTERIOR PAINTS:

A. Paints and Primers: Paints and primers used in non-specialized interior applications (i.e., for wallboard, plaster, wood, metal doors and frames, etc.) shall meet the VOC limitations of the Green Seal Paint Standard GS-11, of Green Seal, Inc., Washington, DC. Product-specific environmental requirements are as follows:

1. Volatile Organic Compounds:
   a. The VOC concentrations (in grams per liter) of the product shall not exceed those listed below as determined by U. S. Environmental Protection Agency (EPA) Reference Test Method 24.

   Interior Paints and Primers:
   Non-flat: 150 g/l

Flat: 50 g/l
The calculation of VOC shall exclude water and tinting color added at the point of sale.

B. Anti-Corrosive and Anti-Rust Paints: Anti-corrosive and anti-rust paints applied to interior ferrous metal substrates 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 shall not exceed those listed below as determined by U. S. Environmental Protection Agency (EPA) Reference Test Method 24.
Anti-Corrosive and Anti-Rust Paints: 250 g/l

The calculation of VOC 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.	Shellac:	
	a. Clear	730
	b. Pigmented	550
3.	Stains	250
4.	Floor Coatings	100
5.	Waterproofing Sealers	250
6.	Sanding Sealers	275
7.	Other Sealers	200

The calculation of VOC must exclude water and tinting color added at the point of sale.

1.12 SUBMITTALS:

A. Submit Material Safety Data Sheets, for all applicable products in accordance with Section 01 33 00, SUBMITTAL PROCEDURES. Applicable products include, but are not limited to adhesives, sealants, carpets, paints and coatings. Material Safety Data Sheets 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

(No Text on This Page)

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, www.smacna.org.

B. ANSI/ASHRAE 52.2-2007, "Method of Testing General Ventilation Air-Cleaning Devices for Removal Efficiency by Particle Size", www.ashrae.org.

1.6 LEED BUILDING GENERAL REQUIREMENTS:

A. Implement practices and procedures as necessary to meet the Project's environmental performance goals as set forth in the specific requirements of this section. Specific Project goals that may impact this area of work include: use of recycled-content materials; use of low-emitting materials; construction waste recycling; and the implementation of a construction indoor air quality management plan. Ensure that the requirements related to these goals, as defined in this section, are implemented to the fullest extent. Substitutions or other changes to the work 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.

3) Institute cleaning activities to remove contaminants from the building prior to occupancy. Clean all coils, air filters and ductwork prior to performing testing, adjusting and balancing of HVAC systems.

4) Sweep the work area on a daily basis. Use an efficient and effective dust collecting method such as damp cloth, wet mop, or vacuum with 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.

3) 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 on-site 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:

   a. OPTION 1 — Flush-Out

      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/sq.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./sq.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

   b. OPTION 2 — Air Testing

      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.

A. A copy of the Construction IAQ Management Plan as defined in Sub-Section 1.7 herein.

B. 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.

B. 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.

C. 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.

D. 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:

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.

A. 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, 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 process does not eliminate or reduce the responsibility of the installing contractors 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 (City of New York) 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.

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 As-Built documents, 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. 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 DVD 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; prepare LEED submittal documents.

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.

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 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, 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. 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).

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

SECTION 01 91 15
GENERAL COMMISSIONING REQUIREMENTS FOR BUILDING ENCLOSURE

REFER TO THE ADDENDUM FOR APPLICABILITY OF THIS SECTION 01 91 15

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 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 "Building Enclosure Functional Performance Test Protocol" 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, including the Building Enclosure, 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 Contractors 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 – Part 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, Below Grade Waterproofing Systems, Opaque Wall/Cladding Systems, and Fenestration systems. 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.
7. 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 Contractors.
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 facilitates bringing the building enclosure systems from a state of Substantial Completion to 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
   1. 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.

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

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

Department of Design and Construction

Contract for Furnishing all Labor and Material Necessary

Contractor

Dated _____ , 20 _____

Approved as to Form
Certified as to Legal Authority

Acting Corporation Counsel

Dated _____ , 20 _____

Entered in the Comptroller's Office

First Assistant Bookkeeper

Dated _____ , 20 _____

FMS ID: **E17-0001**

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

Department of Design and Construction

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

CONTRACT NO. 1 **ELECTRICAL WORK**

Lighting & HVAC Energy Efficiency Upgrades at Louis J. Lefkowitz Building

LOCATION: **80 Centre Street**
BOROUGH: **New York, NY 10013**
CITY OF NEW YORK

Contractor

Dated _____ , 20 _____

Approved as to Form
Certified as to Legal Authority

Acting Corporation Counsel

Dated September 29 , 20 21

Entered in the Comptroller's Office

First Assistant Bookkeeper

Dated _____ , 20 _____

ARN 09.29.2021

Department of Design and Construction

PROJECT ID: **E17-0001**

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:

Lighting & HVAC Energy Efficiency Upgrades at the Louis J. Lefkowitz Building

LOCATION: **80 Centre Street**
BOROUGH: **New York, NY 10013**
CITY OF NEW YORK

CONTRACT NO. 1 **ELECTRICAL WORK**

DCAS

Shenoy Engineering, P.C.

Date: **August 9, 2021**

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

ADDENDA CONTROL SHEET

BID SUBMISSION DATE/ TIME: November 19, 2021; between 11:30am and 2:00pm
BID OPENING DATE/ TIME: November 19; 2:30pm

PROJECT No. : E17-0001

TITLE: Louis Lefkowitz Building Lighting & HVAC Upgrade

ADDENDA ISSUED	NO. OF DWG	DATE	APPROVED BY: ARCHITECTURE/ ENGINEERING	APPROVED BY: GENERAL COUNSEL
#1 Revised Pre-Bid Conference information; Questions from Bidders and Responses to Questions; Revisions to Documents; Revisions to PASSPort Forms		10/29/2021	Sarah Zomick	RRN 10.29.2021

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

October 29, 2021

ADDENDUM No. # 1

FOR FURNISHING ALL LABOR AND MATERIAL NECESSARY AND REQUIRED FOR:

85022B0017 – E17-0001

Louis Lefkowitz Building Lighting & HVAC Upgrade

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

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

1. **The Pre-Bid Conference includes additional requirements:**

   Refer to Attachment C for this information.

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.

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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 CSB_projectinquiries@ddc.nyc.gov.

Richard Jones, PE CWI
Executive Director, Specifications

DDC PROJECT #: **E17-0001**

PROJECT NAME: **Louis Lefkowitz Building Lighting & HVAC Upgrade**

ATTACHMENT A - BIDDERS QUESTIONS AND DDC RESPONSES

No.	Bidders Questions	DDC Responses
1	We would like to submit a request for waiver of MWBE Participation Requirement for this project (Schedule B Part 3).	All waiver requests must be submitted to MWBEModification@ddc.nyc.gov as noted in Volume 1.

DDC PROJECT #: **E17-0001**

PROJECT NAME: **Louis Lefkowitz Building Lighting & HVAC Upgrade**

ATTACHMENT B – REVISIONS TO THE DOCUMENTS

NOT USED

DDC PROJECT #: **E17-0001**

PROJECT NAME: **Louis Lefkowitz Building Lighting & HVAC Upgrade**

ATTACHMENT C – REVISIONS TO PASSPORT FORMS

This Addendum is included within Round 1 of the procurement.

Please note that numbering of addenda is independent of rounds.

Pre Bid Conference Changes:

Additional information for the Pre-Bid Site Visit on November 5th, 2021 at 10:00am:

1) Visitors are to convene at the 10 Hogan Place entrance lobby (NOT 80 Centre St).
2) Security procedures:
    a. All visitors are expected to walk through a metal detector.
    b. All visitors must also complete a health screening assessment before they enter the building. They will be expected to show a clearance email to the security guard: Visitor COVID-19 Health Screening Assessment (office.com)
    c. All visitors must wear a mask to enter the building.
3) Site visit will be staggered in groups of 10-15 people.

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: November 29, 2021; between 11:30am and 2:00pm
BID OPENING DATE/ TIME: November 29; 2:30pm

PROJECT No. : E17-0001

TITLE: Louis Lefkowitz Building Lighting & HVAC Upgrade

ADDENDA ISSUED	NO. OF DWG	DATE	APPROVED BY: ARCHITECTURE/ ENGINEERING	GENERAL COUNSEL
#1 Revised Pre-Bid Conference information; Questions from Bidders and Responses to Questions; Revisions to Documents; Revisions to PASSPort Forms		10/29/2021		
#2 Revised Bid Opening date; Questions from Bidders and Responses to Questions; Revisions to Documents; Revisions to PASSPort Forms		11/16/2021	Sarah Zomick	11.16.2021

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

November 16, 2021

ADDENDUM No. # 2

FOR FURNISHING ALL LABOR AND MATERIAL NECESSARY AND REQUIRED FOR:

85022B0017 – E17-0001

Louis Lefkowitz Building Lighting & HVAC Upgrade

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

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

1. **The Bid Opening for the contract described below scheduled for November 19, 2021, at 2:30 pm is rescheduled to November 29, 2021 at 2:30 pm.**

   Contract #1 – Electrical 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.

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Richard Jones, PE CWI
Executive Director, Specifications

DDC PROJECT #: **E17-0001**

PROJECT NAME: **LOUIS J. LEFKOWITZ BUILDING LIGHTING & HVAC ENERGY EFFICIENCY UPGRADES**

ATTACHMENT A - BIDDERS QUESTIONS AND DDC RESPONSES

No.	Bidders Questions	DDC Responses
1	There is a Proprietary Item for the BMS System, but there is no amount or detailed description for this item. Please provide.	System information is included on contract drawings M-100, M-400, M-401, M-402, Specification section 23 09 00 - Instrumentation and Control for HVAC, Article 2.1. Amount/ quantities shall be included by contractor per contract document scope requirements.
2	We assume all ductwork is existing and shown just for balancing purposes only. Please confirm.	All existing ductwork will remain and is shown for reference and balancing only.
3	Specification 230593-9 mentions HVAC System Cleaning. Since all ductwork and equipment is existing, we assume that HVAC System Cleaning is not part of scope of work for this project. Please confirm or clarify your requirements.	Cleaning of existing system and components shall be provided per 230593, Article 3.5, and limited to the system components included in the contract scope of work. Existing distribution ductwork cleaning is not within scope of work.
4	Is there a Bid Bond Requirement to bid? It is unclear in the documents provided.	Bid Security is required as noted in the Addendum to the General Conditions, Schedule A, as well as in the PASSPort Questionnaire under 'Paper Bid Submissions – To Be Submitted to Agency, Bid Security Requirements.'
5	Please provide the attendance list for the Pre-Bid Site Visit.	This information is included with the Addendum, as noted in Attachment B (item 1) and listed in PASSPort RFx.
6	Can we use photos of the finished project work?	Any and all photos of the interior are prohibited from publication and are only to be used for the project.
7	Please summarize the intent of the Heat Recovery system.	The purpose of the steam condensate heat recovery system is to extract available heat from the condensate to pre-heat the domestic hot water stored for use in the building.
8	Please advise the cost allowance for proprietary items.	There are no cost allowances for this project. See response to Question 1 for further information.
9	Please confirm that emergency power will be provided by an existing emergency circuit and not battery packs.	Emergency lighting fixtures are fed from lighting panels powered by emergency power generators.

10	Is there a schedule or deadline for work?	Project duration is 730 days, as indicated on Addendum to General Conditions.
11	Will there be a lay down or storage space provided on site?	Yes.
12	Is LL88 compliance a required outcome? If so, who will be the verifying party?	No. Sub-metering as required by local law is not required.
13	Is fixture retrofit an acceptable solution to propose in cases where the existing fixture is still in good condition?	No.
14	Will there be an opportunity for bid clarification with the client after bid submission and prior to award?	No.
15	Please provide the Planholders list.	This information is included with the Addendum, as noted in Attachment B (item 2) and listed in PASSPort RFx.
16	We kindly ask for a postponement from the current bid date, November 19, 2021.	The Bid Opening has been rescheduled to November 29, 2021.

DDC PROJECT #: **E17-0001**

PROJECT NAME: **LOUIS J. LEFKOWITZ BUILDING LIGHTING & HVAC ENERGY EFFICIENCY UPGRADES**

ATTACHMENT B – REVISIONS TO THE DOCUMENTS

The following documents are included with the PASSPort RFx:

1- Pre-bid Site Visit sign-in sheet

2- Planholders list

DDC PROJECT #: **E17-0001**

PROJECT NAME: **LOUIS J. LEFKOWITZ BUILDING LIGHTING & HVAC ENERGY EFFICIENCY UPGRADES**

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 Date Changes:

The Bid Opening scheduled for November 19, 2021 at 2:30pm has been rescheduled to November 29, 2021 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: November 29, 2021; between 11:30am and 2:00pm
BID OPENING DATE/ TIME: November 29; 2:30pm

PROJECT No. : E17-0001

TITLE: Louis Lefkowitz Building Lighting & HVAC Upgrade

ADDENDA ISSUED	NO. OF DWG	DATE	APPROVED BY: ARCHITECTURE/ ENGINEERING	GENERAL COUNSEL
#1 Revised Pre-Bid Conference information; Questions from Bidders and Responses to Questions; Revisions to Documents; Revisions to PASSPort Forms		10/29/2021		
#2 Revised Bid Opening date; Questions from Bidders and Responses to Questions; Revisions to Documents; Revisions to PASSPort Forms		11/16/2021		
#3 Questions from Bidders and Responses to Questions; Revisions to Documents; Revisions to PASSPort Forms		11/19/2021	Melissa Cato	ARN 11.19.2021

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

November 19, 2021

ADDENDUM No. # 3

FOR FURNISHING ALL LABOR AND MATERIAL NECESSARY AND REQUIRED FOR:

85022B0017 – E17-0001

Louis Lefkowitz Building Lighting & HVAC Upgrade

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

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

1. **Bidders Questions and Responses to Questions:**
   See Attachment A.

2. **Revisions to Documents:**
   See Attachment B.

3. **Revisions to PASSPort forms:**
   See Attachment C.

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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 CSB_projectinquiries@ddc.nyc.gov.

Richard Jones, PE CWI
Executive Director, Specifications

DDC PROJECT #: **E17-0001**

PROJECT NAME: **LOUIS J. LEFKOWITZ BUILDING LIGHTING & HVAC ENERGY EFFICIENCY UPGRADES**

ATTACHMENT A - BIDDERS QUESTIONS AND DDC RESPONSES

No.	Bidders Questions	DDC Responses
1	Please advise approximate ceiling heights at each floor.	Ceiling heights information are indicated on Drawing E-701 as part of Addendum-3 for reference.
2	Please clarify what structure fixtures will be mounted to. Is the floor structure terra cotta?	Existing slab structure for the building has terracotta base. Fixture mounting shall be per locations and ceiling types, as indicated on contract documents. Refer to terracotta mounting detail on Drawing E-701 as part of Addendum-3.
3	The HVAC upgrade will require the use of heavy equipment (approx. 5000 Lbs.) in the mechanical room. Please advise on procedure for accessing the mechanical room.	Equipment access is through DCAS/Building Service entryways at rear courtyard, towards Baxter St and basement double-door entrances leading to the basement mechanical room. For equipment, refer to schedule note 2 on drawing M-004 for field disassembly and re-assembly.
4	Drawing M-002 has a schedule of types of Steam & Hydronic Control Valves. Please be advised there are only two control valves indicated on drawing M-101 to be replaced we assume all other control valves are existing to remain unless clarified otherwise please advise.	Control valves on systems included in scope of work are to be replaced. Refer to complete contract documents & scope notes for scope of work and quantities. See Notes on drawing M101. Refer to All Contract Drawings, including M-004, control diagrams, piping diagrams, M400, M401, M500 for all valves and other control equipment for all systems to be provided under this contract.

DDC PROJECT #: **E17-0001**

PROJECT NAME: **LOUIS J. LEFKOWITZ BUILDING LIGHTING & HVAC ENERGY EFFICIENCY UPGRADES**

ATTACHMENT B – REVISIONS TO THE DOCUMENTS

1. Drawings E-701, revised to include ceiling heights and detail for fixture support anchoring to terracotta structured slab.

DDC PROJECT #: **E17-0001**

PROJECT NAME: **LOUIS J. LEFKOWITZ BUILDING LIGHTING & HVAC ENERGY EFFICIENCY UPGRADES**

ATTACHMENT C – REVISIONS TO PASSPORT FORMS (Bid Packaging to revise all blue text)

This Addendum initiates Round 3 of the procurement.

Please note that numbering of addenda is independent of rounds.

Questionnaire Changes:

None

Item Grid Changes:

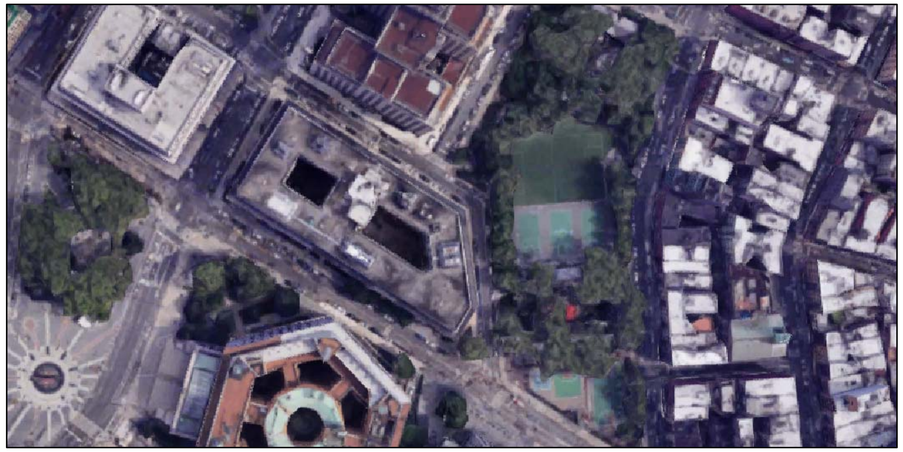
None

LOUIS J. LEFKOWITZ BUILDING

80 Centre Street, New York, NY, 10013

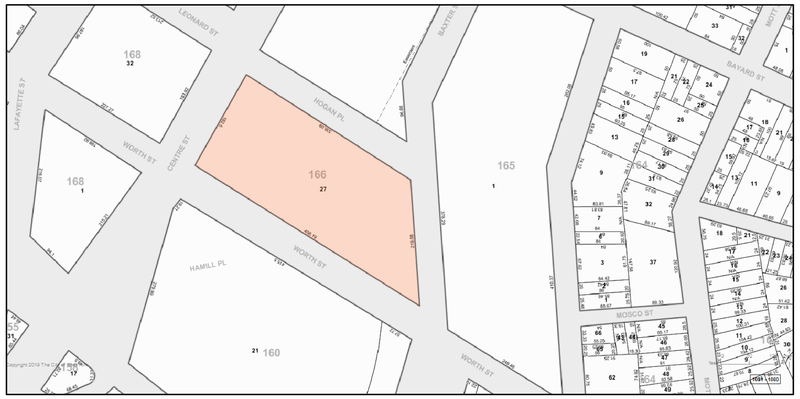
CAPITAL PROJECT No. E17-0001

LIGHTING & HVAC ENERGY EFFICIENCY UPGRADES



VICINITY MAP

To Scale: 1" = 100'



LOCATION MAP

To Scale: 1" = 100'

DRAWING LIST

DRAWING NO.		DRAWING TITLE
01	G001.00	COVER SHEET
02	G002.00	LEGEND, ABBREVIATIONS & GENERAL NOTES
03	EN-001.00	NYCECC ENERGY COMPLIANCE - 1
04	EN-002.00	NYCECC ENERGY COMPLIANCE - 2
05	EN-003.00	NYCECC ENERGY COMPLIANCE - 3
06	M-001.00	GENERAL NOTES, SYMBOLS AND ABBREVIATIONS
07	M-002.00	MECHANICAL SCHEDULES - 1
08	M-003.00	MECHANICAL SCHEDULES - 2
09	M-004.00	MECHANICAL SCHEDULES - 3
10	M-100.00	MECHANICAL BASEMENT PART PLAN - 1
11	M-101.00	MECHANICAL BASEMENT PART PLAN - 2
12	M-102.00	MECHANICAL BASEMENT PART PLAN - 3
13	M-103.00	MECHANICAL NINTH FLOOR PART PLAN
14	M-104.00	MECHANICAL PART PLANS - TOILETS
15	M-200.00	MECHANICAL BASEMENT PART PLAN - 4
16	M-300.00	MECHANICAL RISER DIAGRAM - 1
17	M-301.00	MECHANICAL RISER DIAGRAM - 2
18	M-400.00	MECHANICAL CONTROL DIAGRAM - 1
19	M-401.00	MECHANICAL CONTROL DIAGRAM - 2
20	M-402.00	MECHANICAL CONTROL DIAGRAM - 3
21	M-500.00	MECHANICAL DETAILS SHEET - 1
22	P-001.00	GENERAL NOTES, SYMBOLS AND ABBREVIATIONS
23	P-061.00	PLUMBING DEMOLITION PART PLAN - BASEMENT
24	P-101.00	PLUMBING BASEMENT PART PLAN
25	P-301.00	PLUMBING RISERS
26	P-401.00	PLUMBING DETAILS
27	E-001.00	GENERAL NOTES, ABBREVIATIONS, AND ELECTRICAL SYMBOL LIST
28	E-100A.00	BASEMENT FLOOR ELECTRICAL LIGHTING DEMOLITION PLAN - WEST
29	E-100B.00	BASEMENT FLOOR ELECTRICAL LIGHTING DEMOLITION PLAN - EAST
30	E-101A.00	FIRST FLOOR ELECTRICAL LIGHTING DEMOLITION PLAN - WEST
31	E-101B.00	FIRST FLOOR ELECTRICAL LIGHTING DEMOLITION PLAN - EAST
32	E-102A.00	SECOND FLOOR ELECTRICAL LIGHTING DEMOLITION PLAN - WEST
33	E-102B.00	SECOND FLOOR ELECTRICAL LIGHTING DEMOLITION PLAN - EAST
34	E-103A.00	THIRD FLOOR ELECTRICAL LIGHTING DEMOLITION PLAN - WEST
35	E-103B.00	THIRD FLOOR ELECTRICAL LIGHTING DEMOLITION PLAN - EAST
36	E-104A.00	FOURTH FLOOR ELECTRICAL LIGHTING DEMOLITION PLAN - WEST
37	E-104B.00	FOURTH FLOOR ELECTRICAL LIGHTING DEMOLITION PLAN - EAST
38	E-105A.00	FIFTH FLOOR ELECTRICAL LIGHTING DEMOLITION PLAN - WEST
39	E-105B.00	FIFTH FLOOR ELECTRICAL LIGHTING DEMOLITION PLAN - EAST
40	E-106A.00	SIXTH FLOOR ELECTRICAL LIGHTING DEMOLITION PLAN - WEST
41	E-106B.00	SIXTH FLOOR ELECTRICAL LIGHTING DEMOLITION PLAN - EAST
42	E-107A.00	EIGHTH FLOOR ELECTRICAL LIGHTING DEMOLITION PLAN - WEST
43	E-107B.00	EIGHTH FLOOR ELECTRICAL LIGHTING DEMOLITION PLAN - EAST
44	E-108.00	ELECTRICAL DEMOLITION PART PLANS - BASEMENT AND NINTH FLOOR
45	E-200A.00	BASEMENT FLOOR ELECTRICAL LIGHTING PLAN - WEST
46	E-200B.00	BASEMENT FLOOR ELECTRICAL LIGHTING PLAN - EAST
47	E-201A.00	FIRST FLOOR ELECTRICAL LIGHTING PLAN - WEST
48	E-201B.00	FIRST FLOOR ELECTRICAL LIGHTING PLAN - EAST
49	E-202A.00	SECOND FLOOR ELECTRICAL LIGHTING PLAN - WEST
50	E-202B.00	SECOND FLOOR ELECTRICAL LIGHTING PLAN - EAST
51	E-203A.00	THIRD FLOOR ELECTRICAL LIGHTING PLAN - WEST
52	E-203B.00	THIRD FLOOR ELECTRICAL LIGHTING PLAN - EAST
53	E-204A.00	FOURTH FLOOR ELECTRICAL LIGHTING PLAN - WEST
54	E-204B.00	FOURTH FLOOR ELECTRICAL LIGHTING PLAN - EAST
55	E-205A.00	FIFTH FLOOR ELECTRICAL LIGHTING PLAN - WEST
56	E-205B.00	FIFTH FLOOR ELECTRICAL LIGHTING PLAN - EAST
57	E-206A.00	SIXTH FLOOR ELECTRICAL LIGHTING PLAN - WEST
58	E-206B.00	SIXTH FLOOR ELECTRICAL LIGHTING PLAN - EAST
59	E-207A.00	EIGHTH FLOOR ELECTRICAL LIGHTING PLAN - WEST
60	E-207B.00	EIGHTH FLOOR ELECTRICAL LIGHTING PLAN - EAST
61	E-208.00	ELECTRICAL NEW WORK PART PLANS - BASEMENT AND NINTH FLOOR
62	E-701.00	ELECTRICAL DETAILS SHEET - 1
63	E-702.00	ELECTRICAL DETAILS SHEET - 2

Thomas Foley, P.E., CCM, ENV SP, Deputy Commissioner Date

Susan Koparanian, Program Director, OneNYC+Health Unit Date

Department of Design and Construction

DIVISION OF PUBLIC BUILDINGS

ISSUED FOR BID
6/23/2021

DOB APPROVAL STAMP

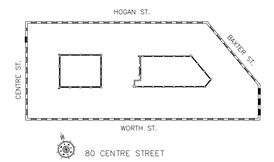
Lighting & HVAC Energy Efficiency Upgrades - Louis J. Lefkowitz Building

MEP Engineers:
SHENOY ENGINEERING, PC
39 US HWY 46 E, SUITE 802
PINEBROOK, NJ, 07058
(973)808-4090 phone
(973)808-4095 fax

Architect
CAPLES JEFFERSON
ARCH. 37-18 Northern Blvd.
Ste 319 Long Island City, NY
11101 Tel: 212.779.9772

Cost Estimate Consultant:
ELLANA INC.
32 BROADWAY, 8TH
FLOOR NEW YORK, NY
10004 TEL 212 971 0936

SITE PLAN



BLOCK: 166 LOT: 27

REVISIONS:

NUMBER	DESCRIPTION	DATE
4.	ISSUED FOR BID	6/23/2021
3.	COMPLIANCE SUBMISSION	3/26/2021
2.	100% CD SUBMISSION	1/26/2021
1.	DOB SUBMISSION	4/17/2020

Department of Design and Construction

DIVISION OF PUBLIC BUILDINGS

CAPITAL PROJECT NUMBER:
E17-0001

PROJECT
Lighting & HVAC Energy Efficiency Upgrades - Louis J. Lefkowitz Building
80 Centre Street, New York, NY, 10013

FOR THE: NYC Department of Citywide Administrative Services

DRAWING TITLE:
COVER SHEET

SEAL & SIGNATURE

DATE:	23 JUNE, 2021
PROJECT NO:	E17-0001
DRAWN BY:	RUNCI MA
CHECKED BY:	RAVI SHENOY
DRAWING NUMBER:	G001.00
CADO FILE No:	01 OF 63

GENERAL CONSTRUCTION NOTES

1. IT IS THE INTENT OF THIS CONTRACT TO RENOVATE THE DESIGNATED BUILDING SPACES AND PERFORM RELATED WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS AND ALL REQUIREMENTS OF LAW, ALTHOUGH ALL NECESSARY WORK MAY NOT BE SPECIFICALLY ITEMIZED IN THE CONSTRUCTION DRAWINGS/SPECIFICATIONS, THE CONTRACTOR SHALL FAMILIARIZE HIMSELF WITH THE EXISTING CONDITIONS AND INCLUDE ALL WORK IMPLIED AND NECESSARY FOR THE REQUIRED RENOVATION.
2. THE CONTRACTOR SHALL VISIT THE JOB SITE AND BECOME FAMILIAR WITH CONDITIONS WHICH AFFECT HIS WORK, PRIOR TO COMMENCING CONSTRUCTION OPERATIONS. ALL RELEVANT DIMENSIONS, LAYOUTS, ETC. SHALL BE VERIFIED IN THE FIELD. IF EXISTING CONDITIONS ARE AT VARIANCE WITH THE CONTRACT DOCUMENTS, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY DDC IN WRITING OF ANY DISCREPANCIES AND AWAIT FURTHER INSTRUCTIONS BEFORE PROCEEDING WITH THE WORK.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ARRANGING FOR SITE ACCESS AND STORAGE OF BUILDING MATERIALS/EQUIPMENT WITH DDC DEVELOPMENT MANAGEMENT.
4. THE CONTRACTOR SHALL COORDINATE ACCESS TO ALL PORTIONS OF THE BUILDING WHERE WORK IS SCHEDULED, WITH DDC DEVELOPMENT MANAGEMENT.
5. BEFORE COMMENCING ANY WORK, THE CONTRACTOR SHALL PAY ALL NECESSARY FEES AND OBTAIN ALL PERMITS, LICENSES, ETC. AS REQUIRED BY THE NYC DEPARTMENT OF BUILDINGS AND ALL OTHER GOVERNMENTAL AGENCIES HAVING JURISDICTION. NO WORK SHALL PROCEED UNTIL ALL NECESSARY BUILDING PERMITS HAVE BEEN OBTAINED AND ARE DISPLAYED AT BUILDING ENTRANCE(S). ALL PERMIT FILINGS SHALL BE COORDINATED WITH DDC.
6. THE JOB SITE, INCLUDING ALL WALKWAYS, SIDEWALKS AND STREETS, SHALL BE KEPT IN A SAFE AND CLEAN CONDITION DURING ALL CONSTRUCTION OPERATIONS TO THE SATISFACTION OF DDC DEVELOPMENT MANAGEMENT. MEANS OF EGRESS FROM BUILDINGS SHALL BE KEPT CLEAR AND UNOBSTRUCTED AT ALL TIMES, WITH NO BUILDING MATERIALS OR EQUIPMENT PERMITTED TO BE STORED IN PUBLIC STAIRS/HALLS OR ENTRANCE LOBBIES.
7. DURING CONSTRUCTION OPERATIONS, DO NOT LOAD OR PERMIT ANY PORTION OF THE BUILDING TO BE LOADED WITH ANY MATERIAL OR EQUIPMENT THAT MAY ENDANGER ITS STRUCTURAL INTEGRITY.
8. WHEN REQUIRED DURING CONSTRUCTION OPERATIONS, THE CONTRACTOR SHALL PROVIDE ADEQUATE WEATHER PROTECTION FOR THE BUILDING AND ITS CONTENTS DURING THE COURSE OF WORK. NO BUILDING, OR PORTION THEREOF, SHALL BE LEFT OPEN TO THE WEATHER OR INADEQUATELY PROTECTED WHEN WORK IS NOT ACTUALLY IN PROGRESS.
9. THE CONTRACTOR SHALL PROVIDE BARRICADES, FENCING AND OTHER TEMPORARY INSTALLATIONS AS REQUIRED TO PROTECT RESIDENTS AND OTHER PERSONNEL DURING CONSTRUCTION OPERATIONS. THE CONTRACTOR SHALL SUBMIT DRAWINGS AS REQUIRED TO DDC, INDICATING LOCATIONS, EXTENT AND CONSTRUCTION DETAILS OF SUCH TEMPORARY INSTALLATIONS.
10. ALL CONSTRUCTION WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE REQUIREMENTS OF ALL APPLICABLE RULES, REGULATIONS, CODES AND ORDINANCES IN EFFECT, INCLUDING THE NEW YORK CITY CONSTRUCTION CODES AND DDC REQUIREMENTS. ALL SUCH WORK SHALL BE PROPERLY SCHEDULED AND COORDINATED WITH DCAS BUILDING ENGINEERS.
11. THE CONTRACTOR SHALL NOTIFY ALL AUTHORITIES HAVING JURISDICTION UPON COMPLETION OF THE WORK AND AS MAY BE REQUIRED.
12. ALL WORK SHALL CONFORM TO APPLICABLE REQUIREMENTS OF THE NYC BUILDING CODE, NYC MECHANICAL CODE, NYC PLUMBING CODE, NYC ELECTRICAL CODE, NYC FIRE DEPARTMENT REGULATIONS AND ALL RULES AND REGULATIONS OF UTILITY COMPANIES HAVING JURISDICTION.
13. THE CONTRACTOR SHALL PERFORM HIS WORK SO THAT A MINIMUM OF DISRUPTION IS CAUSED TO THOSE PORTIONS OF THE BUILDING(S) WHERE NO CONSTRUCTION IS SCHEDULED.
14. ALL PLUMBING WORK SHALL BE PERFORMED UNDER THE DIRECT AND CONTINUOUS SUPERVISION OF A NYC LICENSED MASTER PLUMBER, WHO SHALL ARRANGE FOR AND OBTAIN ALL REQUIRED INSPECTIONS AND SIGN-OFFS. ALL NEW PLUMBING WORK SHALL COMPLY WITH ALL APPLICABLE REGULATIONS.
15. ALL ELECTRICAL WORK SHALL BE PERFORMED UNDER THE DIRECT AND CONTINUOUS SUPERVISION OF A NYC LICENSED ELECTRICIAN, WHO SHALL ARRANGE FOR AND OBTAIN ALL REQUIRED INSPECTIONS AND SIGN-OFFS. ALL NEW ELECTRICAL WORK SHALL COMPLY WITH ALL APPLICABLE REGULATIONS.
16. ALL REQUIRED FIRESTOPPING SHALL BE SUBJECT TO SPECIAL INSPECTION BY AN INDEPENDENT LICENSED ARCHITECT/ENGINEER, RETAINED BY DDC. FIRESTOPPING INSPECTIONS SHALL BE UNCOVERED AND EXPOSED TO PERMIT PROPER INSPECTION BY DDC'S CONSULTANT, WHO SHALL VERIFY THAT THE INSTALLATIONS COMPLY WITH THE CONTRACT DOCUMENTS AND THE NYC CONSTRUCTION CODES.
17. FINAL INSPECTION SHALL BE PERFORMED AS A PROGRESS INSPECTION BY AN INDEPENDENT LICENSED ARCHITECT/ENGINEER RETAINED BY DDC.
18. THE ENGINEER OF RECORD FOR THE PROJECT SHALL BE NOTIFIED IN ADVANCE OF ALL NYC DEPARTMENT OF BUILDINGS INSPECTIONS AND OTHER REQUIRED TESTING.
19. ALL CONSTRUCTION OPERATIONS SHALL BE EXECUTED IN ACCORDANCE WITH BEST ACCEPTED TRADE PRACTICES AND AS PER MANUFACTURER'S RECOMMENDATIONS. ALL WORK SHALL BE PERFORMED BY EXPERIENCED AND CAPABLE MECHANICS AND TRADES PEOPLE.
20. WHERE CRANE OPERATIONS ARE REQUIRED, PROVIDE MINIMUM 72-HOUR ADVANCE NOTIFICATION, INCLUDING HEIGHT OF CRANE, TO DDC DEVELOPMENT MANAGEMENT.
21. WHERE SCAFFOLDING AND HOISTING EQUIPMENT ARE REQUIRED, POSITION EQUIPMENT FOR THE WORK AS APPROVED BY DDC DEVELOPMENT MANAGEMENT. ALL SUCH EQUIPMENT SHALL COMPLY WITH THE NYC CONSTRUCTION CODES AND REQUIREMENTS OF OTHER GOVERNMENTAL AGENCIES HAVING JURISDICTION.
22. THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR ALL SAFETY AND WORK PROCEDURES DURING CONSTRUCTION OPERATIONS. ALL WORK SHALL BE PERFORMED IN A MANNER THAT ASSURES THE GREATEST SAFETY TO THE WORKERS, SUPERVISORY PERSONNEL, RESIDENTS AND THE PUBLIC. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO INSURE THAT ALL APPLICABLE SAFETY REGULATIONS ARE COMPLIED WITH AND ALL NECESSARY PRECAUTIONS ARE UNDERTAKEN.
23. THE TERM "TO REMAIN" IS USED IN THE CONTRACT DOCUMENTS TO INDICATE EXISTING CONSTRUCTION/COMPONENTS WHERE NO MAJOR WORK IS REQUIRED. THIS TERM, HOWEVER, DOES NOT PRECLUDE PATCHING, REFINISHING, ETC. AS REQUIRED FOR THESE ITEMS.
24. WHEN PATCHING AND REPAIRING ARE CALLED FOR IN THE CONTRACT DOCUMENTS, IT IS NOT TO BE CONSTRUED THAT THESE ARE THE ONLY LOCATIONS WHERE SUCH WORK MAY BE REQUIRED. SEE GENERAL CONSTRUCTION NOTES 1 & 2.
25. PATCH AND REPAIR EXISTING DAMAGED CONSTRUCTION, AND WHERE DISTURBED BY THE CONTRACTOR, ALIGN PATCHING AND BLEND WITH ADJACENT EXISTING CONSTRUCTION TO REMAIN. ALL PATCHING AND REPAIRS SHALL BE DONE WITH MATERIALS AND WORKMANSHIP SIMILAR TO EXISTING.
26. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING ANY AND ALL EXISTING CONSTRUCTION DAMAGED BY HIMSELF OR HIS SUBCONTRACTORS UNDER HIS CONTROL. THIS SHALL INCLUDE OFFICES AND OTHER DESIGNATED CONSTRUCTION AREAS, AS WELL AS ALL OTHER LOCATIONS ON THE PREMISES. IF REPAIRS ARE REQUIRED, NEW MATERIALS SHALL MATCH EXISTING AND ALL WORK SHALL BE COMPLETED TO THE SATISFACTION OF AND AT NO ADDITIONAL COST TO DDC.
27. WHERE CONFLICTS OCCUR BETWEEN THE CONTRACT DRAWINGS AND THE THE CONTRACT SPECIFICATIONS, THE MORE STRINGENT REQUIREMENTS SHALL APPLY. ANY SUCH ADDITIONAL WORK REQUIRED SHALL BE PERFORMED BY THE CONTRACTOR(S) AT NO ADDITIONAL COST TO DDC.
28. WHERE CONFLICTS OCCUR BETWEEN THE CONTRACT DOCUMENTS AND THE NYC CONSTRUCTION CODES OR REQUIREMENTS OF OTHER AGENCIES HAVING JURISDICTION, THE MORE STRINGENT REQUIREMENTS SHALL APPLY. ANY SUCH WORK REQUIRED, NOT SHOWN ON THE CONTRACT DOCUMENTS, SHALL BE PERFORMED AS "EXTRA WORK" IN ACCORDANCE WITH DIVISION 01 - GENERAL CONDITIONS OF THE CONTRACT SPECIFICATIONS.
29. CONTRACT DRAWINGS SHALL NOT BE SCALED AND WRITTEN DIMENSIONS SHALL SUPERSEDE SCALED DIMENSIONS. ALL RELEVANT EXISTING DIMENSIONS SHALL BE VERIFIED IN THE FIELD PRIOR TO COMMENCING WORK.
30. THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS, CATALOG CUTS, MATERIAL SAMPLES AND OTHER DATA PERTAINING TO THE WORK AS SPECIFIED IN THE CONTRACT SPECIFICATIONS.
31. ALL MATERIALS, ASSEMBLIES AND METHODS OF CONSTRUCTION SHALL COMPLY WITH THE REQUIREMENTS OF, AND SHALL HAVE BEEN ACCEPTED FOR USE BY, THE NYC CONSTRUCTION CODES, OR AS APPROVED BY THE BOARD OF STANDARDS AND APPEALS, OR AS OTHERWISE ACCEPTABLE TO THE DEPARTMENT OF BUILDINGS.
32. NO MATERIAL OF ANY MANUFACTURER OR PRODUCER SHALL BE ACCEPTABLE FOR THE USE INTENDED, UNLESS AND UNTIL THE MATERIAL HAS BEEN TESTED FOR COMPLIANCE WITH REQUIREMENTS UNDER TEST METHODS PRESCRIBED BY THE NYC CONSTRUCTION CODES AND ACCEPTED BY THE COMMISSIONER, OR SHALL HAVE NYC MATERIAL AND EQUIPMENT ACCEPTANCE (MEA) APPROVAL, PRIOR APPROVAL BY THE NYC BOARD OF STANDARDS AND APPEALS (BSA), OR HAVE APPROVAL OF THE NYC OFFICE OF TECHNICAL CERTIFICATION AND RESEARCH (OTCR).
33. CONTRACTOR SHALL PREPARE AND SET UP STAGING AREA AND TRANSFER STATION WITH SIGNAGE, IN SUPPORT OF THE COMPLETE PROJECT.
34. CONTRACTOR SHALL PREPARE A SITE RESTORATION PLAN WHICH SHALL INCLUDE RESTORATION OF ANY EMBANKMENTS, FENCING, STORMWATER OUTFALL, WALKWAYS, AND RELATED ENVIRONMENTAL COMPONENTS.
35. CONTRACTOR SHALL COMPLY WITH ALL ENVIRONMENTAL AND HISTORICAL REGULATIONS IN ACCORDANCE WITH SHPO.
36. THE CONTRACTOR SHALL TAKE WHATEVER PRECAUTIONS NECESSARY TO PROTECT THE

GENERAL CONSTRUCTION NOTES

PROPERTY OF DDC AND IT'S TENANTS FROM DAMAGE OR LOSS ARISING OUT OF THE CONTRACTORS EXECUTION OF THIS CONTRACT. THE CONTRACTOR SHALL ASSUME RESPONSIBILITY FOR ANY SUCH DAMAGE OR LOSS CAUSED BY THEM AND SHALL, AT THE CONTRACTORS OWN EXPENSES, REPAIR OR REPLACE ANY PROPERTY THAT BECOMES DAMAGED OR DESTROYED. DDC'S REPRESENTATIVE SHALL DETERMINE WHETHER AFFECTED PROPERTY HAS BEEN DAMAGED TO SUCH AN EXTENT THAT IT CANNOT BE RESTORED TO ITS ORIGINAL CONDITION AND MUST REPLACE IT IN KIND.

37. THE CONTRACTOR IS TO ACQUAINT THEMSELVES WITH THE EXISTENCE AND LOCATION OF ANY SURFACES OR SUBSURFACE, STRUCTURES AND UTILITIES WITHIN THE PROJECT AREA AND IS WARNED AGAINST THE USE OF ANY EQUIPMENT OVER UTILITIES., THE CONTRACTOR SHALL TAKE FULL RESPONSIBILITY FOR ANY DAMAGES CAUSED BY THIER OPERATIONS AND REPAIR OR REPLACE DAMAGE AT IT'S OWN EXPENSE WITHOUT ANY REMEDY FOR AN INCREASE IN CONTRACT PRICE.
38. DDC'S REVIEW AND ACCEPTANCE SHALL NOT RELIEVE THE CONTRACTOR FROM RESPONSIBILITY OF ERRORS IN SHOP DRAWINGS OR FOR PROPER COORDINATION AND ASSEMBLY OF MATERIAL AND EQUIPMENT WITH OTHER WORK; NOR FROM THE RESPONSIBILITY OF FURNISHING MATERIALS AND LABOR NOT INDICATED ON THE SHOP DRAWINGS, BUT REQUIRED BY THE CONTRACT DOCUMENTS FOR COMPLETION OF THE WORK.
39. IT IS THE CONTRACTORS RESPONSIBILITY TO TAKE FIELD MEASUREMENTS AND VERIFY ALL DIMENSIONS AND FIELD CONDITIONS UPON THE NEW WORK IS IN ANY WAY DEPENDENT FOR ACCURATE AN CORRECT WORKMANSHIP. THERE WILL BE NO ADJUSTMENT OF THE CONTRACT PRICE DUE TO FIELD MEASUREMENT AND CONDITIONS DIFFERENCING FROM THOSE SHOWN ON THE CONTRACT DRAWINGS.
40. NO WORK SHALL BE FABRICATED, OR MATERIALS DELIVERED TO THE SITE UNTIL FINAL APPROVAL OF ALL SHOP DRAWINGS AND OTHER REQUIRED SUBMISSIONS FOR THAT WORK HAS BEEN OBTAINED. FINAL CLEAN ELECTRONIC FILES OF APPROVED SHOP DRAWINGS MUST BE SUBMITTED. AT THE TIME OF SUBMISSIONS THE CONTRACTOR MUST CALL ATTENTION IN WRITING OF ANY DEVIATIONS.
41. THE CONTRACTOR SHALL PROVIDE COORDINATION SHOP DRAWINGS SHOWING THE COMBINED WORKS OF ALL TRADED OF ALL LOCATIONS OF RESTRICTIVE SPACES OR POTENTIAL CONFLICTS OCCUR. CONTRACTOR SHALL INDICATE THE ORDER OF INSTALLATION FOR EACH TRADE.
42. CONTRACTOR SHALL PROVIDE THE CONTRACTOR'S TEMPORARY FIELD OFFICE AND ITS TEMPORARY FENCE TO PREVENT VANDALISM, IF REQUIRED, AT THE CONTRACTOR'S EXPENSE.

PROJECT SCOPE

ELECTRICAL

ECM-5:
REMOVE AND REPLACE EXISTING LIGHTING FIXTURES WITH NEW LED LIGHTING FIXTURES

ECM-6:
PROVIDE OCCUPANCY SENSOR WITH DIMMING AND DAYLIGHT HARVESTING SENSOR.

MECHANICAL

ECM-2:
REMOVE EXISTING SUPPLY FAN MOTOR FOR PRINTSHOP AIR HANDLING UNIT AND PROVIDE NEW PREMIUM EFFICIENCY MOTORS AND VFD STARTER.
REMOVE TWO EXISTING TOILET EXHAUST FANS MOTORS W/ STARTERS AND PROVIDE NEW PREMIUM EFFICIENCY MOTORS AND VFD STARTER.

ECM-8:
PROVIDE TESTING AND BALANCING FOR SEVEN (7) EXIST. AIR HANDLING UNITS SERVING MARRIAGE BUREAU; ONE (1) AIR HANDLING UNIT SERVING PRINTSHOP; TWO (2) TOILET EXHAUST FANS.
PROVIDE TESTING AND BALANCING FOR MARRIAGE BUREAU HYDRONIC HEATING LOOP, MARRIAGE BUREAU CHILLED WATER LOOP AND PRINTSHOP CHILLED WATER LOOP;

ECM -N1:
PROVIDE CONDENSATE HEAT RECOVERY SYSTEMS FOR MARRIAGE BUREAU HYDRONIC HEATING AND DOMESTIC HOT WATER HEATING.

ECM-N2:
PROVIDE TESTING OF EXIST. MARRIAGE BUREAU BMS SYSTEM AND NEW BMS SYSTEM FOR PRINTSHOP AIR HANDLING UNIT.

PLUMBING:
ECM-2:

REMOVE THREE (3) EXISTING WATER PUMPS AND PROVIDE NEW WATER PUMPS WITH PREMIUM EFFICIENCY MOTOR AND VFD STARTER.

ECM-N1:
PROVIDE HOT WATER, HOT WATER RETURN PIPING CONNECTION FOR NEW CONDENSATE HEAT RECOVERY SYSTEM.

NYC DEPARTMENT OF BUILDINGS NOTES

THE FOLLOWING NOTES SHALL APPLY THROUGHOUT.

1. ALL WORK SHALL BE EXECUTED IN FULL COMPLIANCE WITH THE APPLICABLE PROVISIONS OF ALL LAWS BY-LAWS, STATUTES, ORDINANCES, CODES, RULES, REGULATIONS, AND LAWFUL ORDERS OF PUBLIC AUTHORITIES BEARING ON THE PERFORMANCE AND EXECUTION OF THE WORK. WORK SHALL BE IN ACCORDANCE WITH THE LATEST 2014 CONSTRUCTION CODES

   THE CONTRACTOR SHALL PROMPTLY NOTIFY THE COMMISSIONER OF ANY PORTIONS OF THE WORK IN THE CONTRACT DOCUMENTS THAT ARE AT VARIANCE WITH THE ABOVE.

2. ALL MATERIALS, ASSEMBLIES, FORMS METHODS OF CONSTRUCTION AND SERVICE EQUIPMENT SHALL MEET THE FOLLOWING REQUIREMENTS:
   a). THEY SHALL HAVE BEEN ACCEPTABLE PRIOR TO THE EFFECTIVE DATE OF THE CODE BY THE BOARD OF STANDARD AND APPEALS.
   b). THEY SHALL HAVE BEEN ACCEPTED FOR THE USE UNDER THE PRESCRIBED TEST METHODS BY THE COMMISSIONER (OR)
   c). APPROVED BY THE OFFICE OF TECHNICAL CERTIFICATION AND RESEARCH (OTCR)
   d). SHALL BE LISTED AND LABELED BY DOB RECOGNIZED AGENCY TO MEET REQUIRED STANDARD

3. MATERIALS OR ASSEMBLIES REQUIRED TO HAVE A FIRE RESISTANCE RATING SHALL COMPLY WITH ONE OF THE FOLLOWING:
   a). THEY SHALL CONFORM WITH A.I.S.G. "FIRE RESISTANCE RATING", DATED 1985 (OR)
   b). THEY SHALL HAVE BEEN TESTED IN ACCORDANCE WITH ASTM E119, STANDARD METHODS OF FIRE TESTS OF BUILDING CONSTRUCTION AND MATERIALS AND ACCEPTED BY THE COMMISSIONER (OR)
   c). THEY SHALL HAVE BEEN ACCEPTABLE PRIOR TO THE EFFECTIVE DATE OF THE CODE.
   d). APPROVED BY OTCR.

4. THE CONTRACTORS LICENSED PROFESSIONAL IS RESPONSIBLE FOR FILING APPLICATION AND OBTAINING PERMITS FOR SCAFFOLDING, SIDEWALK BRIDGING AND AND OTHER CONSTRUCTION EQUIPMENT OR PUBLIC PROTECTIVE REQUIRED TO ENSURE SAFETY OF OPERATION AND THE PUBLIC AS PER NYC CONSTRUCTION CODE CHAPTER 33 SECTION BC 3307. CONTRACTOR IS ALSO RESPONSIBLE FOR OBTAINING LETTER OF COMPLETION, APPLICATION FOR CONSTRUCTION PERMITS SHALL BE PROCESSED THOUGH THE BUILDINGS DEPARTMENT

5. ALL WORK SHALL COMPLY WITH THE 2016 NYC ENERGY CONSERVATION CODE

6. THESE DRAWINGS HAVE BEEN PREPARED BY OR AT THE DIRECTION OF THE UNDERSIGNED AND TO THE BEST OF THE UNDERSIGNED'S KNOWLEDGE, BELIEF AND PROFESSIONAL JUDGEMENT ARE IN COMPLIANCE WITH THE NYC CONSTRUCTION CODES, INCLUDING THE NEW YORK CITY ENERGY CONSERVATION CODE, EXCEPT WHERE EXEMPT AS NOTED.

7. ALL NEW WORK COMPLIES WITH ICC 117.1 2017.

8. CALCULATIONS TO DEMONSTRATE COMPLIANCE WITH NYC ENERGY CONSTRUCTION CODE ARE SHOWN ON EN- SERIES DRAWINGS.

9. ALL NEW INTERIOR FINISHES SHALL BE CONSTRUCTED OF MATERIALS MEETING CHAPTER 8 OF THE NYC BUILDING CODE AND CHAPTER 2 OF NEW YORK CITY ENVIRONMENTALLY PREFERABLE PURCHASING (NYC EPP) REQUIREMENT.

10. FOLLOW CHAPTER 33 OF THE 2014 NYC BUILDING CODE FOR PROTECTION OF THE PUBLIC AND ADJACENT PROPERTIES. REFERENCES IN THE SPECIFICATIONS AND THE DRAWINGS TO THE 1968 BUILDING CODE PARAGRAPHS REGARDING PROTECTION SHALL BE CONSIDERED TO BE THAT OF CHAPTER 33 OF THE 2008 NYC BUILDING CODE.

11. PROGRESS INSPECTIONS REQUIRED TO BE PERFORMED DURING CONSTRUCTION FOR ANY NEW BUILDING, ADDITION OR ALTERATION PROJECT ARE IDENTIFIED BY THE APPLICANT ACCORDING TO THE SCOPE OF WORK AND LISTED AND DESCRIBED IN THE DRAWINGS. IN ACCORDANCE WITH SECTION BC 109.9, WHERE AN INSPECTION OR TEST FAILS, THE CONSTRUCTION SHALL BE CORRECTED.

12. IN ACCORDANCE WITH ARTICLE 116 OF TITLE 28 AND SECTION BC 109, CONSTRUCTION SHALL BE SCHEDULED TO ALLOW REQUIRED PROGRESS INSPECTIONS TO TAKE PLACE, AND THAT ROOFS, CEILINGS, EXTERIOR WALLS, INTERIOR WALLS, FLOORS, FOUNDATIONS, BASEMENTS AND ANY OTHER CONSTRUCTION SHALL NOT BE COVERED OR ENCLOSED UNTIL REQUIRED PROGRESS INSPECTIONS ARE COMPLETED OR THE PROGRESS INSPECTOR INDICATES THAT SUCH COVERING OR ENCLOSURE MAY PROCEED AT EACH STAGE OF CONSTRUCTION, AS APPLICABLE.

13. CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS FROM THE DEPARMENT OF BUILDINGS AND OTHER GOVERNMENT AGENCIES HAVING JURISDICTION NO WORK SHALL PROCEED UNTIL BUILDING PERMIT IS DISPLAYED AT FRONT OF THE BUILDING.

14. ALL ADJOINING PROPERTY AFFECTED BY ANY OPERATIONS SHALL BE PROTECTED PER THE REQUIREMENTS OF TITLE 27 (BUILDING CODE) CHAPTER 33 (SAFEGUARDS DURING CONSTRUCTION OR DEMOLITION) OF THE NYC BUILDING CODE AND SECTION BC 3309 (PROTECTION OF ADJOINING PROPERTY).

15. THE CONTRACTOR SHALL PROVIDE, ERECT AND MAINTAIN ALL TEMPORARY BARRIERS AND GUARDS, AND ALL TEMPORARY SHORING AND BRACING, AS REQUIRED BY DOB RULES AND REGULATIONS.

16. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE PROTECTION OF CONDITIONS AND MATERIALS WITHIN, AND ADJACENT TO THE PROPOSED CONSTRUCTION AREA. THE CONTRACTOR SHALL DESIGN AND INSTALL ADEQUATE SHORING AND BRACING FOR ALL CONSTRUCTION OR REMOVAL TASKS. THE CONTRACTOR SHALL HAVE SOLE RESPONSIBILITY FOR ANY DAMAGE OR INJURIES CAUSED BY, OR DURING THE EXECUTION OF THE WORK.

17. SITE SAFETY PLAN: CONTRACTOR SHALL PREPARE FILE, OBTAIN AND PAY FOR REQUIRED APPROVAL OF A SITE SAFETY PLAN MEETING THE REQUIREMENTS OF TITLE 28 (ADMINISTRATIVE CODE) CHAPTER 1 ARTICLE 110 (SITE SAFETY PLAN), FILING OF SITE SAFETY PLAN IS REQUIRED PRIOR TO THE ISSUANCE OF A WORK PERMIT, PURSUANT TO SECTION BC 3310.3 (SITE SAFETY PLAN)

18. SITE SAFETY MONITORING PROGRAM: CONTRACTOR SHALL PROVIDE THE FULL-TIME PRESENCE ON SITE OF A SITE SAFETY MANAGER OR COORDINATOR, ACCEPTABLE TO THE DOB PURSUANT TO THE REQUIREMENTS OF DOB SERVICE NOTICE, DATED FEBRUARY 2015: OVERSIGHT MAY BE PROVIDED BY ONE OR MORE OF THE FOLLOWING INDIVIDUALS, BASED ON THE TYPE OF WORK IN PROGRESS AT A GIVEN TIME: SITE SAFETY MANAGER CERTIFIED BY THE DOB IN ACCORDANCE WITH THE REQUIREMENTS OF TITLE 28 (ADMINISTRATIVE CODE) CHAPTER 4 ARTICLE 402 (SITE SAFETY MANAGER CERTIFICATE), OR "COMPETENT" OR "QUALIFIED" PERSON, OR LICENSED RIGGER OR DESIGNATED RIGGING FOREMAN - EACH MEETING THE RESPECTIVE REQUIREMENTS DETAILED IN CHAPTER 33 NYCBC

19. CONTRACTOR SHALL EXPEDITIOUSLY OBTAIN, FROM THE DOB, ALL AVAILABLE WAIVERS AND/OR REDUCTIONS IN THE AMOUNT OF PRESENCE ON SITE OF THE SITE SAFETY MANAGER, AND BASED ON THE LIMITED SCALE AND SCOPE OF THE PROJECT, AS PERMITTED BY BC 3310.11 (MODIFICATIONS TO THE SITE SAFETY MONITORING PROGRAM), AND DOB SERVICE NOTICE, DATED FEBRUARY 2015.

20. DESIGNATION OF SITE SAFETY MANAGER IS REQUIRED PRIOR TO ISSUANCE OF A WORK PERMIT, PURSUANT TO SECTION BC 3310.5 (SITE SAFETY MANAGER OR COORDINATOR TO BE DESIGNATED) AND BC 3310.4 (SITE SAFETY MONITORING PROGRAM)

21. SITE SAFETY MANAGERS OR COORDINATORS SHALL COMPLY WITH THE REQUIREMENTS OF BC 3310.8 (SITE SAFETY MANAGER'S AND COORDINATOR'S DUTIES).

22. CONTRACTOR SHALL COMPLY WITH THE REQUIREMENTS OF BC 3310.7 (CONTRACTOR SHALL INFORM PERSONNEL).

23. THESE PLANS ARE APPROVED ONLY FOR THE WORK INDICATED ON THE APPLICATION SPECIFICATION SHEET. ALL OTHER MATTERS SHOWN ARE NOT TO BE RELIED UPON, OR TO BE CONSIDERED AS EITHER BEING APPROVED OR IN ACCORDANCE WITH CODES.

DEPARTMENT OF BUILDINGS INSPECTIONS

1. ALL SPECIAL INSPECTIONS PURSUANT TO THE NEW YORK CITY BUILDING CODE, ARTICLE 116, SECTION 116.2.3, ARE TO BE PERFORMED BY THE AUTHORITY. IF WORK OR MATERIALS SUBJECT TO SPECIAL INSPECTION ARE COVERED UP BEFORE THE SPECIAL INSPECTION IS PERFORMED, SUCH WORK SHALL BE ENTIRELY UNCOVERED UNDER THE SUPERVISION OF THE ARCHITECT OR HIS REPRESENTATIVE. THE ARCHITECT SHALL SEE THAT ALL WORK UNDER HIS SUPERVISION COMPLIES WITH THE APPROVED PLANS.
2. BUILDING DEPARTMENT INSPECTORS SHALL REVIEW RECORDS AT JOB SITES TO MAKE CERTAIN THAT THERE ARE ADEQUATE SELF-INSPECTIONS.
3. THE FOLLOWING ITEMS SHALL BE SUBJECT TO NYC DEPARTMENT OF BUILDINGS SPECIAL INSPECTIONS AS PER BC SECTION 1701, INCLUDING BUT NOT LIMITED TO:

   SPECIAL INSPECTIONS

   MECHANICAL SYSTEMS, PER BC 1704.16
   HEATING SYSTEMS, PER BC 1704.25
   FIRE-RESISTANT PENETRATIONS AND JOINTS PER BC 1704.27
   POST-INSTALLED ANCHORS (BB#2014-018, 2014-019) PER BC 1704.32

   PROGRESS INSPECTIONS

   PRELIMINARY PER 28-116.2.1, BC 110.2
   ENERGY CODE COMPLIANCE, PER BC 110.3.5
   HVAC-R AND SERVICE WATER PIPING DESIGN AND INSULATION PER 1 RCNY 5000-01(IB5, IIB5)
   DUCT LEAKAGE TESTING, INSULATION AND DESIGN PER 1 RCNY 5000-01 (IB6), (IIB6)
   VENTILATION AND AIR DISTRIBUTION SYSTEM PER 1 RCNY 5000-01 (IB2)
   HVAC-R AND SERVICE WATER HEATING EQUIPMENT PER 1 RCNY 5000-01 (IB3), (IIB3)
   INTERIOR LIGHTING POWER PER 1 RCNY 5000-01(IC2, IIC3)
   LIGHTING CONTROLS PER 1 RCNY 5000-01(IC5)
   ELECTRICAL MOTORS PER 1 RCNY 5000-01(IC6)
   FINAL INSPECTION - PER 28 - 116.2.4.2, BC 110.5, DIRECTIVE 14 OF 1975, AND 1 RCNY 101-10

RESPONSIBILITY CLAUSE

1. CONTRACTOR SHALL VISIT THE SITE OF THE PROPOSED WORK TO FULLY ACQUAINT HIMSELF WITH THE CONDITIONS AS THEY EXIST. HE SHALL ACCEPT THE CONDITIONS AS THEY EXIST. HE SHALL INCLUDE IN HIS BID ALL WORK SHOWN, SPECIFIED AND IMPLIED IN THE DRAWINGS AND SPECIFICATIONS, TO DO A COMPLETE JOB TO THE SATISFACTION OF DDC.
2. NYC DDC DOES NOT ASSUME RESPONSIBILITY FOR THE ACCURACY OF LAYOUTS AND OTHER DATA SHOWN ON THE DRAWINGS. THE CONTRACTOR SHALL VERIFY ALL MEASUREMENTS, LAYOUTS AND THE EXACT CONDITIONS AT THE SITE.
3. THE CONTRACTOR SHALL ACCEPT FULL RESPONSIBILITY FOR THE PROPER PROTECTION OF THE EXISTING STRUCTURES, PARTICULARLY EXISTING PAVEMENTS, WALLS AND PLANTING, WHICH ARE TO REMAIN DURING CONSTRUCTION AND FOR THE LIFE OF THE CONTRACT. ANY STRUCTURES FOUND TO BE DAMAGED DURING CONSTRUCTION, SHALL BE REPAIRED OR REPLACED AT THE THE DISCRETION OF DDC'S INSPECTOR, TO THE COMPLETE SATISFACTION OF DDC AND AT THE CONTRACTOR'S EXPENSE.

PHASING NOTES

1. THE CONTRACTOR IS RESPONSIBLE TO PHASE THE WORK OF THIS CONTRACT WITH DCAS BUILDING MANAGEMENT TO MINIMUM INTERFERENCE.

2. CONTRACTOR SHALL MAINTAIN CONTINUITY OF ALL SYSTEMS, DURING HEATING AND DOMESTIC WATER SYSTEMS WORK.

DOB APPROVAL STAMP

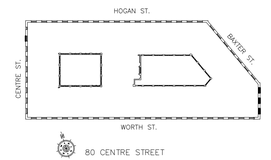
Lighting & HVAC Energy Efficiency Upgrades - Louis J. Lefkowitz Building

MEP Engineers:
SHENOY ENGINEERING, PC
39 US HWY 46 E, SUITE 802
PINEBROOK, NJ, 07058
(973)808-4090 phone
(973)808-4095 fax

Architect
CAPLES JEFFERSON
ARCH. 37-18 Northern Blvd.
Ste 319 Long Island City, NY
11101 Tel: 212.779.9772

Cost Estimate Consultant:
ELLANA INC.
32 BROADWAY, 8TH
FLOOR NEW YORK, NY
10004 TEL 212 971 0936

SITE PLAN



BLOCK: 166 LOT: 27

REVISIONS:

NUMBER	DESCRIPTION	DATE
4.	ISSUED FOR BID	6/23/2021
3.	COMPLIANCE SUBMISSION	3/26/2021
2.	100% CD SUBMISSION	1/26/2021
1.	DOB SUBMISSION	4/17/2020

Department of Design and Construction

DIVISION OF PUBLIC BUILDINGS

CAPITAL PROJECT NUMBER:
E17-0001

PROJECT
Lighting & HVAC Energy Efficiency Upgrades - Louis J. Lefkowitz Building
80 Centre Street, New York, NY, 10013

FOR THE: NYC Department of Citywide Administrative Services

DRAWING TITLE:
LEGEND, ABBREVIATIONS & GENERAL NOTES

SEAL & SIGNATURE

DATE:	23 JUNE, 2021
PROJECT NO:	E17-0001
DRAWN BY:	RUNCI MA
CHECKED BY:	RAVI SHENOY

DRAWING NUMBER:
G002.00

CADO FILE No:

COMcheck Software Version 4.1.5.1

Interior Lighting Compliance Certificate

Project Information

Energy Code: 90.1 (2013) Standard
Project Title: Lighting and HVAC Energy Efficiency Upgrades at Louis J. Lefkowitz Building
Project Type: Alteration

Construction Site:
80 Centre St
Manhattan, NY 10013

Owner/Agent:
NYC DDC
30 30 Thomson Ave
Long Island City, NY 11101

Designer/Contractor:
Shenoy Engineering PC
39 US Hwy 46E
Suite 802
Pine Brook, NJ 07054
9738084090

Allowed Interior Lighting Power

A Area Category	B Floor Area (ft2)	C Allowed Watts / ft2	D Allowed Watts (B X C)
1-Court Rooms (Courthouse/Police Station/Penitentiary:Courtroom)	70760	1.72	121707
2-Closed Office Spaces (Common Space Types:Office - Enclosed)	152500	1.11	169275
3-Open Office Spaces (Common Space Types:Office - Open Plan)	96280	0.98	94354
4-Electrical/HVAC and Telecom (Common Space Types:Electrical/Mechanical)	25000	0.42	10500
5-Corridors (Common Space Types:Corridor/Transition >=8 ft wide)	55464	0.66	36606
6-Restrooms (Common Space Types:Restrooms)	13250	0.98	12985
7-Print Shop (Common Space Types:Workshop)	4246	1.59	6751
		Total Allowed Watts =	452179

Proposed Interior Lighting Power

A Fixture ID : Description / Lamp / Wattage Per Lamp / Ballast	B Lamps/ Fixture	C # of Fixtures	D Fixture Watt.	E (C X D)
Court Rooms (Courthouse/Police Station/Penitentiary:Courtroom 70760 sq.ft.)				
LED 1: Type A: 1x4 Pendant: Other:	1	706	52	36712
Closed Office Spaces (Common Space Types:Office - Enclosed 152500 sq.ft.)				
LED 1: Type A: 1x4 Pendant: Other:	1	102	52	5304
LED 5: Type C2: 1x4 Surface: Other:	1	78	41	3198
LED 7: Type E1: 2x4 Pendant: Other:	1	410	66	27060
LED 8: Type E2: 2x4 Surface: Other:	1	26	66	1716
LED 9: Type F: 2x4 Recessed: Other:	1	205	42	8610
LED 10: Type G: 2x2 Recessed: Other:	1	387	44	17028
LED 11: Type H1: 1x8 Pendant: Other:	1	174	132	22968
LED 12: Type H2: 1x8 Surface: Other:	1	2	132	264
LED 24: Type I: 1x8 Pendant: Other:	1	25	104	2600
LED 26: Typle K: 2x4 Recessed: Other:	1	4	48	192
Open Office Spaces (Common Space Types:Office - Open Plan 96280 sq.ft.)				
LED 5: Type C2: 1x4 Surface: Other:	1	251	41	10291
LED 6: Type D: 1x4 Pendant: Other:	1	17	7	119

A Fixture ID : Description / Lamp / Wattage Per Lamp / Ballast	B Lamps/ Fixture	C # of Fixtures	D Fixture Watt.	E (C X D)
LED 7: Type E1: 2x4 Pendant: Other:	1	146	66	9636
LED 9: Type F: 2x4 Recessed: Other:	1	187	42	7854
LED 10: Type G: 2x2 Recessed: Other:	1	122	44	5368
LED 12: Type H2: 1x8 Surface: Other:	1	86	132	11352
Electrical/HVAC and Telecom (Common Space Types:Electrical/Mechanical 25000 sq.ft.)				
LED 2: Type B1: 1x4 Pendant: Other:	1	257	30	7710
LED 3: Type B2: 1x4 Surface: Other:	1	21	30	630
Corridors (Common Space Types:Corridor/Transition >=8 ft wide 55464 sq.ft.)				
LED 4: Type C1: 1x4 Pendant: Other:	1	302	41	12382
LED 5: Type C2: 1x4 Surface: Other:	1	34	41	1394
LED 25: Type J1: 6" Recessed: Other:	1	173	36	6228
LED 23: Type J2: 8" Recessed: Other:	1	8	72	576
Restrooms (Common Space Types:Restrooms 13250 sq.ft.)				
LED 4: Type C1: 1x4 Pendant: Other:	1	30	41	1230
LED 5: Type C2: 1x4 Surface: Other:	1	6	41	246
Print Shop (Common Space Types:Workshop 4246 sq.ft.)				
LED 2: Type B1: 1x4 Pendant: Other:	1	68	30	2040
			Total Proposed Watts =	202708

Interior Lighting PASSES

Interior Lighting Compliance Statement

Compliance Statement: The proposed interior lighting alteration project represented in this document is consistent with the building plans, specifications, and other calculations submitted with this permit application. The proposed interior lighting systems have been designed to meet the 90.1 (2013) Standard requirements in COMcheck Version 4.1.5.1 and to comply with any applicable mandatory requirements listed in the Inspection Checklist.

Name - Title _____ Signature _____ Date _____

COMcheck Software Version 4.1.5.1

Inspection Checklist

Energy Code: 90.1 (2013) Standard

Requirements: 100.0% were addressed directly in the COMcheck software

Text in the "Comments/Assumptions" column is provided by the user in the COMcheck Requirements screen. For each requirement, the user certifies that a code requirement will be met and how that is documented, or that an exception is being claimed. Where compliance is itemized in a separate table, a reference to that table is provided.

Section # & Req.ID	Plan Review	Complies?	Comments/Assumptions
4.2.2, 8.4.1.1, 8.4.1.2, 8.7 [PR6][3]	Plans, specifications, and/or calculations provide all information with which compliance can be determined for the electrical systems and equipment and document where exceptions are claimed. Feeder connectors sized in accordance with approved plans and branch circuits sized for maximum drop of 3%.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
4.2.2, 9.4.3, 9.7 [PR4][3]	Plans, specifications, and/or calculations provide all information with which compliance can be determined for the interior lighting and electrical systems and equipment and document where exceptions to the standard are claimed. Information provided should include interior lighting power calculations, wattage of bulbs and ballasts, transformers and control devices.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.

Additional Comments/Assumptions:

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)

Section # & Req.ID	Rough-In Electrical Inspection	Complies?	Comments/Assumptions
8.4.2 [EL10][2]	At least 50% of all 125 volt 15- and 20-Amp receptacles are controlled by an automatic control device.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
9.4.1.1 [EL1][2]	Automatic control requirements prescribed in Table 9.6.1, for the appropriate space type, are installed. Mandatory lighting controls (labeled as 'REQ') and optional choice controls (labeled as 'ADD1' and 'ADD2') are implemented.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
9.4.1.1 [EL2][2]	Independent lighting controls installed per approved lighting plans and all manual controls readily accessible and visible to occupants.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
9.4.1.2 [EL11][2]	Parking garage lighting is equipped with required lighting controls and daylight transition zone lighting.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
9.4.1.1f [EL13][1]	Daylight areas under skylights and roof monitors that have more than 150 W combined input power for general lighting are controlled by photocontrols.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
9.4.1.3 [EL4][1]	Separate lighting control devices for specific uses installed per approved lighting plans.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
9.6.2 [EL8][1]	Additional interior lighting power allowed for special functions per the approved lighting plans and is automatically controlled and separated from general lighting.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.

Additional Comments/Assumptions:

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)

Section # & Req.ID	Final Inspection	Complies?	Comments/Assumptions
8.7.1 [FI16][3]	Furnished as-built drawings for electric power systems within 30 days of system acceptance.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
8.7.2 [FI17][3]	Furnished O&M instructions for systems and equipment to the building owner or designated representative.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
9.2.2.3 [FI18][1]	Interior installed lamp and fixture lighting power is consistent with what is shown on the approved lighting plans, demonstrating proposed watts are less than or equal to allowed watts.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	*See the Interior Lighting fixture schedule for values.*

Additional Comments/Assumptions:

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)

DOB APPROVAL STAMP

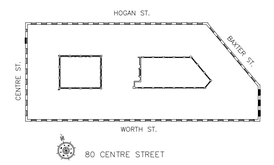
Lighting & HVAC Energy Efficiency Upgrades - Louis J. Lefkowitz Building

MEP Engineers:
SHENOY ENGINEERING, PC
39 US HWY 46 E, SUITE 802
PINEBROOK, NJ, 07058
(973)808-4090 phone
(973)808-4095 fax

Architect
CAPLES JEFFERSON
ARCH. 37-18 Northern Blvd.
Ste 319 Long Island City, NY
11101 Tel: 212.779.9772

Cost Estimate Consultant:
ELLANA INC.
32 BROADWAY, 8TH
FLOOR NEW YORK, NY
10004 TEL 212 971 0936

SITE PLAN



BLOCK: 166 LOT: 27

REVISIONS:

NUMBER	DESCRIPTION	DATE
4.	ISSUED FOR BID	6/23/2021
3.	COMPLIANCE SUBMISSION	3/26/2021
2.	100% CD SUBMISSION	1/26/2021
1.	DOB SUBMISSION	4/17/2020

Department of Design and Construction

DIVISION OF PUBLIC BUILDINGS

CAPITAL PROJECT NUMBER:
E17-0001

PROJECT
Lighting & HVAC Energy Efficiency Upgrades - Louis J. Lefkowitz Building
80 Centre Street, New York, NY, 10013

FOR THE: NYC Department of Citywide Administrative Services

DRAWING TITLE:
NYCECC ENERGY COMPLIANCE - 1

SEAL & SIGNATURE

DATE: 23 JUNE, 2021
PROJECT NO: E17-0001
DRAWN BY:
CHECKED BY:
DRAWING NUMBER:
EN-001.00
CADO FILE No:
03 OF 63

COMcheck Software Version COMcheckWeb
Mechanical Compliance Certificate

Project Information

Energy Code: 2020 New York City Energy Conservation Code, Appendix CA (modified 90.1-2016)
Project Title: Lighting & HVAC Energy Efficiency Upgrade- Louis J. Lefkowitz Bldg.
Location: New York, New York
Climate Zone: 4a
Project Type: New Construction
Construction Site: Owner/Agent: Designer/Contractor:

Additional Efficiency Package(s)

Unspecified

Mechanical Systems List

Quantity System Type & Description

1 HVAC System (Unknown):
Heating: 1 each - Hydronic or Steam Coil, Hot Water, Capacity = 2373 kBtu/h
No minimum efficiency requirement applies

Mechanical Compliance Statement

Compliance Statement: The proposed mechanical design represented in this document is consistent with the building plans, specifications, and other calculations submitted with this permit application. The proposed mechanical systems have been designed to meet the 2020 New York City Energy Conservation Code, Appendix CA (modified 90.1-2016) requirements in COMcheck Version COMcheckWeb and to comply with any applicable mandatory requirements listed in the Inspection Checklist.

Name - Title _____ Signature _____ Date _____

COMcheck Software Version COMcheckWeb
Inspection Checklist

Energy Code: 2020 New York City Energy Conservation Code, Appendix CA

Requirements: 78.0% were addressed directly in the COMcheck software

Text in the "Comments/Assumptions" column is provided by the user in the COMcheck Requirements screen. For each requirement, the user certifies that a code requirement will be met and how that is documented, or that an exception is being claimed. Where compliance is itemized in a separate table, a reference to that table is provided.

Section # & Req.ID	Plan Review	Complies?	Comments/Assumptions
4.2.2, 6.4.4.2.1, 6.7.2 [PR2][1]	Plans, specifications, and/or calculations provide all information with which compliance can be determined for the mechanical systems and equipment and document where exceptions to the standard are claimed. Load calculations per acceptable engineering standards and handbooks.	☑Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
4.2.2, 8.4.1.1, 8.4.1.2, 8.7 [PR6][2]	Plans, specifications, and/or calculations provide all information with which compliance can be determined for the electrical systems and equipment and document where exceptions are claimed. Feeder connectors sized in accordance with approved plans and branch circuits sized for maximum drop of 3%.	☑Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
6.7.2.4 [PR5][1]	Detailed instructions for HVAC systems commissioning included on the plans or specifications for projects >=50,000 ft2.	☐Complies ☐Does Not ☐Not Observable ☑Not Applicable	**Exception:** Requirement does not apply.
8.4.5 [PR11][1]	Electrical meters for tenant spaces in covered buildings. Each covered tenant space in a new building shall be equipped with a separate meter or sub-meter to measure the electrical consumption of such space when let or sublet. See section details and Section 28-311.2 of the Administrative Code. As new covered tenant spaces are created, they shall be equipped with meters or sub-meters as provided in this section	☐Complies ☐Does Not ☐Not Observable ☑Not Applicable	**Exception:** Requirement does not apply.
I1 [PR12][1]	Plans, specifications, and/or calculations provide all information with which compliance can be determined for the additional energy efficiency package options.	☐Complies ☐Does Not ☐Not Observable ☑Not Applicable	**Exception:** Requirement does not apply.

Additional Comments/Assumptions:

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)

Section # & Req.ID	Footing / Foundation Inspection	Complies?	Comments/Assumptions
6.4.3.7 [FO9][3]	Freeze protection and snow/ice melting system sensors for future connection to controls.	☐Complies ☐Does Not ☐Not Observable ☑Not Applicable	**Exception:** Requirement does not apply.

Additional Comments/Assumptions:

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)

Section # & Req.ID	Mechanical Rough-In Inspection	Plans Verified Value	Field Verified Value	Complies?	Comments/Assumptions
6.4.1.4, 6.4.1.5 [ME1][2]	HVAC equipment efficiency verified. Non-NAECA HVAC equipment labeled as meeting 90.1.	Efficiency:____	Efficiency:____	☐Complies ☐Does Not ☐Not Observable ☑Not Applicable	*See the Mechanical Systems list for values.*
6.4.3.4.1 [ME3][3]	Stair and elevator shaft vents have motorized dampers that automatically close.			☐Complies ☐Does Not ☐Not Observable ☑Not Applicable	**Exception:** Requirement does not apply.
6.4.3.4.2, 6.4.3.4.3 [ME4][3]	Outdoor air and exhaust systems have motorized dampers that automatically shut when not in use and meet maximum leakage rates. Check gravity dampers where allowed.			☐Complies ☐Does Not ☐Not Observable ☑Not Applicable	**Exception:** Requirement does not apply.
6.4.3.4.5 [ME39][3]	Enclosed parking garage ventilation has automatic contaminant detection and capacity to stage or modulate fans to 50% or less of design capacity.			☐Complies ☐Does Not ☐Not Observable ☑Not Applicable	**Exception:** Requirement does not apply.
6.4.3.4.4 [ME5][3]	Ventilation fans >0.75 hp have automatic controls to shut off fan when not required.			☐Complies ☐Does Not ☐Not Observable ☑Not Applicable	**Exception:** HVAC systems intended to operate continuously.
6.4.3.8 [ME6][1]	Demand control ventilation provided for spaces >500 ft2 and >25 people/1000 ft2 occupant density and served by systems with air side economizer, auto modulating outside air damper control, or design airflow >3,000 cfm.			☐Complies ☐Does Not ☐Not Observable ☑Not Applicable	Requirement will be met.
6.5.3.2.1 [ME40][2]	DX cooling systems >= 75 kBtu/h (>= 65 kBtu/h effective 1/2016) and chilled-water and evaporative cooling fan motor hp >= ¼ designed to vary supply fan airflow as a function of load and comply with operational requirements.			☐Complies ☐Does Not ☐Not Observable ☑Not Applicable	**Exception:** Requirement does not apply. *See the Mechanical Systems list for values.*
6.4.4.1.1 [ME7][3]	Insulation exposed to weather protected from damage. Insulation outside of the conditioned space and associated with cooling systems is vapor retardant.			☑Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
6.4.4.1.2 [ME8][2]	HVAC ducts and plenums insulated per Table 6.8.2. Where ducts or plenums are installed in or under a slab, verification may need to occur during Foundation Inspection.	R-____	R-____	☑Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
6.4.4.1.3 [ME9][2]	HVAC piping insulation thickness. Where piping is installed in or under a slab, verification may need to occur during Foundation Inspection.	____ in.	____ in.	☑Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
6.4.4.1.4 [ME41][3]	Thermally ineffective panel surfaces of sensible heating panels have insulation >= R-3.5.			☑Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)

Section # & Req.ID	Mechanical Rough-In Inspection	Plans Verified Value	Field Verified Value	Complies?	Comments/Assumptions
6.4.4.2.1 [ME10][2]	Ducts and plenums having pressure class ratings are Seal Class A construction.			☐Complies ☐Does Not ☐Not Observable ☑Not Applicable	**Exception:** Requirement does not apply.
6.4.4.2.2 [ME11][3]	Ductwork operating >3 in. water column requires air leakage testing.			☐Complies ☐Does Not ☐Not Observable ☑Not Applicable	**Exception:** Requirement does not apply.
6.5.2.2.1 [ME50][2]	Three-pipe hydronic systems using a common return for hot and chilled water are not used.			☑Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
6.5.2.3 [ME19][3]	Dehumidification controls provided to prevent reheating, recooling, mixing of hot and cold airstreams or concurrent heating and cooling of the same airstream.			☐Complies ☐Does Not ☐Not Observable ☑Not Applicable	
6.5.2.4.1 [ME68][3]	Humidifiers with airstream mounted preheating jackets have preheat auto-shutoff value set to activate when humidification is not required.			☐Complies ☐Does Not ☐Not Observable ☑Not Applicable	**Exception:** Requirement does not apply.
6.5.2.4.2 [ME69][3]	Humidification system dispersion tube hot surfaces in the airstreams of ducts or air-handling units insulated >= R-0.5.			☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
6.5.2.5 [ME70][3]	Preheat coils controlled to stop heat output whenever mechanical cooling, including economizer operation, is active.			☑Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
6.5.2.6 [ME106][3]	Units that provide ventilation air to multiple zones and operate in conjunction with zone heating and cooling systems are prevented from using heating or heat recovery to warm supply air above 60°F when representative building loads or outdoor air temperature indicate that most zones demand cooling.			☐Complies ☐Does Not ☐Not Observable ☑Not Applicable	**Exception:** Requirement does not apply.
6.5.3.3 [ME42][3]	Multiple zone VAV systems with DDC of individual zone boxes have static pressure setpoint reset controls.			☐Complies ☐Does Not ☐Not Observable ☑Not Applicable	**Exception:** Requirement does not apply. *See the Mechanical Systems list for values.*
6.5.4.2 [ME25][3]	HVAC pumping systems with >= 3 control values designed for variable fluid flow (see section details).			☐Complies ☐Does Not ☐Not Observable ☑Not Applicable	**Exception:** Requirement does not apply.
6.5.4.3, 6.5.4.3.1, 6.5.4.3.2 [ME26][3]	Fluid flow shutdown in pumping systems to multiple chillers or boilers when systems are shut down.			☑Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)

Section # & Req.ID	Mechanical Rough-In Inspection	Plans Verified Value	Field Verified Value	Complies?	Comments/Assumptions
6.5.4.4 [ME27][3]	Temperature reset by representative building loads in pumping systems >10 hp for chiller and boiler systems >300,000 Btu/h.			☑Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
6.5.6.1 [ME56][1]	Exhaust air energy recovery on systems meeting Tables 6.5.6.1-1, and 6.5.6.1-2.			☐Complies ☐Does Not ☐Not Observable ☑Not Applicable	**Exception:** Requirement does not apply.
6.5.6.2 [ME31][3]	Condenser heat recovery system that can heat water to 85 °F or provide 60% of peak heat rejection is installed for preheating of service hot water.			☑Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
6.5.7.2.1 [ME32][2]	Kitchen hoods >5,000 cfm have make up air >=50% of exhaust air volume.			☐Complies ☐Does Not ☐Not Observable ☑Not Applicable	**Exception:** Requirement does not apply.
6.5.7.2.4 [ME49][3]	Approved field test used to evaluate design air flow rates and demonstrate proper capture and containment of kitchen exhaust systems.			☐Complies ☐Does Not ☐Not Observable ☑Not Applicable	**Exception:** Requirement does not apply.
6.5.8.1 [ME34][2]	Unenclosed spaces that are heated use only radiant heat.			☐Complies ☐Does Not ☐Not Observable ☑Not Applicable	**Exception:** Requirement does not apply.
6.4.3.9 [ME63][2]	Heating for vestibules and air curtains with integral heating include automatic controls that shut off the heating system when outdoor air temperatures > 45F. Vestibule heating and cooling systems controlled by a thermostat in the vestibule with heating setpoint <= 60F and cooling setpoint >= 80F.			☐Complies ☐Does Not ☐Not Observable ☑Not Applicable	**Exception:** Requirement does not apply.
6.5.10 [ME73][3]	Doors separating conditioned space from the outdoors have controls that disable/reset heating and cooling system when open.			☐Complies ☐Does Not ☐Not Observable ☑Not Applicable	
6.7.2.3.2.1 [ME53][3]	Mechanical systems, Renewable Systems, and SWH Commissioning: Air outlets and zone terminal devices have means for air balancing. See section details,			☐Complies ☐Does Not ☐Not Observable ☑Not Applicable	**Exception:** Requirement does not apply.
6.7.2.3.2.2 [ME54][3]	Mechanical systems, Renewable Systems, and SWH Commissioning: HVAC hydronic heating and cooling coils have means to balance and have pressure test connections. See section details,			☑Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.

Additional Comments/Assumptions:

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)

Lighting & HVAC Energy Efficiency Upgrades - Louis J. Lefkowitz Building

MEP Engineers:
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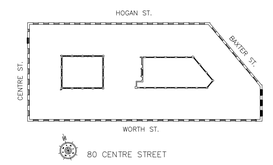
11101 Tel: 212.779.9772

Cost Estimate Consultant:
ELLANA INC.
32 BROADWAY, 8TH
FLOOR NEW YORK, NY
10004 TEL 212 971 0936

SITE PLAN



BLOCK: 166 LOT: 27

REVISIONS:

NUMBER	DESCRIPTION	DATE
4.	ISSUED FOR BID	6/23/2021
3.	COMPLIANCE SUBMISSION	3/26/2021
2.	100% CD SUBMISSION	1/26/2021
1.	DOB SUBMISSION	4/17/2020

Department of Design and Construction

DIVISION OF PUBLIC BUILDINGS

CAPITAL PROJECT NUMBER:
E17-0001

PROJECT
Lighting & HVAC Energy Efficiency Upgrades - Louis J. Lefkowitz Building
80 Centre Street, New York, NY, 10013

FOR THE: NYC Department of Citywide Administrative Services

DRAWING TITLE:
NYCECC ENERGY COMPLIANCE - 2

DOB APPROVAL STAMP

SEAL & SIGNATURE

DATE:	23 JUNE, 2021
PROJECT NO:	E17-0001
DRAWN BY:	RUNCI MA
CHECKED BY:	RAVI SHENOY

DRAWING NUMBER:
EN-002.00

CADO FILE No: _____ 04 OF 63

Section # & Req.ID	Rough-In Electrical Inspection	Complies?	Comments/Assumptions
8.4.2 [EL10][2]	At least 50% of all 125 volt 15- and 20-Amp receptacles are controlled by an automatic control device.	☐Complies ☐Does Not ☐Not Observable ☑Not Applicable	**Exception:** Requirement does not apply.
8.4.3 [EL11][2]	New buildings have electrical energy use measurement devices installed. Where tenant spaces exist, each tenant is monitored separately. In buildings with a digital control system the energy use is transmitted to to control system and displayed graphically.	☐Complies ☐Does Not ☐Not Observable ☑Not Applicable	**Exception:** Requirement does not apply.
10.4.1 [EL9][2]	Electric motors meet requirements where applicable.	☑Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.

Additional Comments/Assumptions:

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)

Section # & Req.ID	Final Inspection	Complies?	Comments/Assumptions
6.4.3.1.2 [FI3][3]	Thermostatic controls have a 5 °F deadband.	☐Complies ☐Does Not ☐Not Observable ☑Not Applicable	
6.4.3.2 [FI20][3]	Temperature controls have setpoint overlap restrictions.	☐Complies ☐Does Not ☐Not Observable ☑Not Applicable	
6.4.3.3.1 [FI21][3]	HVAC systems equipped with at least one automatic shutdown control.	☐Complies ☐Does Not ☐Not Observable ☑Not Applicable	
6.4.3.3.2 [FI22][3]	Setback controls allow automatic restart and temporary operation as required for maintenance.	☐Complies ☐Does Not ☐Not Observable ☑Not Applicable	
6.4.3.6 [FI6][3]	When humidification and dehumidification are provided to a zone, simultaneous operation is prohibited. Humidity control prohibits the use of fossil fuel or electricity to produce RH > 30% in the warmest zone humidified and RH < 60% in the coldest zone dehumidified.	☐Complies ☐Does Not ☐Not Observable ☑Not Applicable	
6.7.2.1 [FI7][3]	Furnished HVAC as-built drawings submitted within 90 days of system acceptance.	☑Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
6.7.2.2 [FI8][3]	Furnished O&M manuals for HVAC systems within 90 days of system acceptance.	☑Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
6.7.2.3 [FI9][1]	An air and/or hydronic system balancing report is provided for HVAC systems serving zones >5,000 ft2 of conditioned area.	☑Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
6.7.2.4 [FI10][1]	HVAC control systems have been tested to ensure proper operation, calibration and adjustment of controls.	☐Complies ☐Does Not ☐Not Observable ☑Not Applicable	
10.4.3 [FI24][2]	Elevators are designed with the proper lighting, ventilation power, and standby mode.	☐Complies ☐Does Not ☐Not Observable ☑Not Applicable	**Exception:** Requirement does not apply.
6.7.2.3.1 [FI28][1]	Mechanical systems, Renewable Systems, and SWH Commissioning: Commisioning plan developed by registered design professional or approved agency. See section details.	☑Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
6.7.2.3.3.1 [FI31][1]	Mechanical systems, Renewable Systems, and SWH Commissioning: HVAC equipment has been tested to ensure proper operation. See section details.	☐Complies ☐Does Not ☐Not Observable ☑Not Applicable	

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)

Section # & Req.ID	Final Inspection	Complies?	Comments/Assumptions
6.7.2.3.3.2 [FI10][1]	Mechanical systems, Renewable Systems, and SWH Commissioning: HVAC control systems have been tested to ensure proper operation, calibration and adjustment of controls. See section details.	☑Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
6.7.2.3.4 [FI29][1]	Mechanical systems, Renewable Systems, and SWH Commissioning: Preliminary commissioning report completed and certified by registered design professional or approved agency. See section details.	☐Complies ☐Does Not ☐Not Observable ☑Not Applicable	
6.7.2.3.5.1 [FI7][3]	Mechanical systems, Renewable Systems, and SWH Commissioning: Furnished HVAC as-built drawings submitted within 90 days of system acceptance. See section details.	☑Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
6.7.2.3.5.3 [FI43][1]	Mechanical systems, Renewable Systems, and SWH Commissioning: An air and/or hydronic system balancing report is provided for HVAC systems. See section details.	☐Complies ☐Does Not ☐Not Observable ☑Not Applicable	
6.7.2.3.5.4 [FI30][1]	Mechanical systems, Renewable Systems, and SWH Commissioning: Final commissioning report due to building owner within 90 days of receipt of certificate of occupancy. See section details.	☐Complies ☐Does Not ☐Not Observable ☑Not Applicable	

Additional Comments/Assumptions:

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)

Lighting & HVAC Energy Efficiency Upgrades - Louis J. Lefkowitz Building

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Architect
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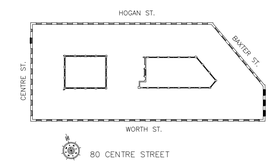
11101 Tel: 212.779.9772

Cost Estimate Consultant:
ELLANA INC.
32 BROADWAY, 8TH
FLOOR NEW YORK, NY
10004 TEL 212 971 0936

SITE PLAN



BLOCK: 166 LOT: 27

REVISIONS:

NUMBER	DESCRIPTION	DATE
4.	ISSUED FOR BID	6/23/2021
3.	COMPLIANCE SUBMISSION	3/26/2021
2.	100% CD SUBMISSION	1/26/2021
1.	DOB SUBMISSION	4/17/2020

Department of Design and Construction

DIVISION OF PUBLIC BUILDINGS

CAPITAL PROJECT NUMBER:
E17-0001

PROJECT
Lighting & HVAC Energy Efficiency Upgrades - Louis J. Lefkowitz Building
80 Centre Street, New York, NY, 10013

FOR THE: NYC Department of Citywide Administrative Services

DRAWING TITLE:
NYCECC ENERGY COMPLIANCE - 3

DOB APPROVAL STAMP

SEAL & SIGNATURE

DATE:	23 JUNE, 2021
PROJECT NO:	E17-0001
DRAWN BY:	RUNCI MA
CHECKED BY:	RAVI SHENOY
DRAWING NUMBER:	EN-003.00
CADO FILE No:	05 OF 63

ABBREVIATIONS AND SYMBOL LIST

SYMBOL	DESCRIPTION
DUCTWORK	
	SUPPLY AIR DUCT OR FRESH AIR DUCT
	RETURN AIR DUCT OR EXHAUST AIR DUCT
	DARK SOLID LINES - CONTRACT WORK - U.O.N.
	EXIST. WORK TO REMAIN
OR	EXIST. WORK TO BE REMOVED
10 x 8	DUCT - WIDTH (IN) x DEPTH (IN)
EXH	EXHAUST AIR DUCT
SA	SUPPLY AIR DUCT
VD	MANUAL VOLUME DAMPER
M	MOTORIZED DAMPER
(2,000)/2,000 CFM	2,000 CUBIC FEET PER MINUTE OF AIR FLOW
CHWS	CHILLED WATER SUPPLY
CHWR	CHILLED WATER RETURN
D	DRAINAGE PIPING
HHWS	HEATING HOT WATER SUPPLY
HHWR	HEATING HOT WATER RETURN
HWS	DOMESTIC HOT WATER SUPPLY
HWR	DOMESTIC HOT WATER RETURN
LPS	LOW PRESSURE STEAM PIPING
LPR	LOW PRESSURE RETURN PIPING
PD	PUMP DRAINAGE PIPING
	DIRECTION OF FLOW (AIR
	POINT OF DISCONNECTION NEW WORK TO EXIST. WORK
	POINT OF CONNECTION NEW WORK TO EXIST. WORK
	RETURN OR EXHAUST
T	THERMOSTAT
TS	SPACE TEMPERATURE SENSOR
OR	STRAINER WITH BLOW OFF
	UNION (FLANGED OR SCREWED)
OR	CONTROL VALVE
OR	GATE VALVE OR SHUT OFF VALVE
	SELF CONTAINED CONTROL VALVE
	THERMOSTATIC STEAM TRAPS
OR F	LOW PRESSURE TRAP RIG ASSEMBLY
TC	TIME CLOCK
S/R A1	STEAM SUPPLY/RETURN RISER GROUP A NO. 1
VAV	VARIABLE AIR VOLUME CONTROL BOX.

ACCH	AIR COOLED CHILLER
AD	ACCESS DOOR
AHU	AIR HANDLER UNIT
CI RAD	CAST IRON RADIATOR
C.F.M.	CUBIC FEET PER MINUTE
CV	CONVECTOR
CHWP	CHILLED WATER PUMP
CHWS	CHILLED WATER SUPPLY
CHWR	CHILLED WATER RETURN
CR	CEILING REGISTER
CRHX	CONDENSATE RECOVERY HEAT EXCHANGER
CD	CEILING DIFFUSER
DB	DRY BULB TEMPERATURE, °F
D	DRAIN
DDC	DIRECT DIGITAL CONTROL
EAT	ENTERING AIR TEMPERATURE
EDR	EQUIVALENCE OF DIRECT RADIATION
EF	EXHAUST FAN
(ER.)	EXIST. TO REMAIN
EXH	EXHAUST
EDR	EQUIVALENT DIRECT RADIATION
ER OR ETR	EXIST. TO REMAIN
EXIST.	EXIST.
FTR	FINNED TUBE RADIATOR
FCU	FAN COIL UNIT
FD OR FD/AD	FIRE DAMPER AND ACCESS DOOR
FSD OR SFD	FIRE SMOKE DAMPER AND ACCESS DOOR
HP	HORSE POWER
HZ	HERTZ
HHWS	HEATING HOT WATER SUPPLY
HHWR	HEATING HOT WATER RETURN
LBS	POUNDS
LPS	LOW PRESSURE STEAM SUPPLY
LPR	LOW PRESSURE CONDENSATE RETURN
MPS	MEDIUM PRESSURE STEAM SUPPLY
MPR	MEDIUM PRESSURE CONDENSATE RETURN
MAX	MAXIMUM
MIN	MINIMUM
OA	OUTSIDE AIR
PD	PUMP DISCHARGE
PS	PRINT SHOP
PSI	POUNDS PER SQUARE INCHES
PH	PHASE
RPM	REVOLUTION PER MINUTE
SA	SUPPLY AIR
SP	STATIC PRESSURE
SF	SQUARE FEET
TR	TRANSFER REGISTER
VIF	VERIFY IN FIELD
VAC	VACUUM PUMP

GENERAL NOTES

1. PRIOR TO STARTING WORK, THE CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS AND EXIST. CONDITIONS OF THE SITE, AND ADVISE THE ENGINEER OF ANY DISCREPANCIES.
2. THE CONTRACTOR SHALL, UNLESS OTHERWISE PROVIDED IN THE CONTRACT DOCUMENTS, SECURE AND PAY FOR THE REQUIRED CONSTRUCTION PERMIT(S), FEES, LICENCES AND INSPECTIONS NECESSARY FOR THE PROPER EXECUTION OF THE WORK.
3. COORDINATION OF ALL WORK UNDER THIS CONTRACT SHALL BE MAINTAINED TO ENSURE THE QUALITY AND TIMELY COMPLETION OF THE WORK/PROJECT.
4. THE CONTRACTOR SHALL PERFORM ALL CUTTING AND PATCHING & PAINTING REQUIRED TO COMPLETE THE WORK OR TO MAKE ITS PARTS FIT TOGETHER PROPERLY WITHOUT COMPRISING THE QUALITY OF THE WORK. MUST RESTORE TO ORIGINAL CONDITION.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ADEQUATELY BRACING AND PROTECTING ALL WORK DURING CONSTRUCTION AGAINST DAMAGE, BREAKAGE, COLLAPSE, DISTORTIOINS, AND OFF ALIGNMENTS ACCORDING TO CODES AND STANDARDS OF GOOD PRACTICE.
6. WHERE MANUFACTURERS' NAMES AND PRODUCT NUMBERS ARE INDICATED ON THE DRAWINGS IT SHALL BE CONSTRUED TO MEAN THE ESTABLISHING OF QUALITY AND PERFORMANCE STANDARDS OF SUCH ITEMS. ALL PRODUCTS MUST BE SUBMITTED TO THE ENGINEER FOR APPROVAL BEFORE THEY SHALL BE DEEMED EQUAL.
7. ADDITIONAL NOTES WHICH ARE APPLICABLE TO THIS PROJECT MAY BE FOUND THROUGHOUT THE CONTRACT DRAWINGS.
8. ANY DISCREPANCIES OR ERRORS IN THE PLANS, SPECIFICATIONS AND DETAILS MUST BE REPORTED TO THE ENGINEER PROMPTLY. NO CHANGES IN THE DRAWINGS ARE PERMISSIBLE WITHOUT THE CONSENT OF THE ENGINEER.
9. PROVIDE AND MAINTAIN TEMPORARY PARTITIONS OR DUST BARRIERS ADEQUATE TO PREVENT THE SPREAD OF DUST AND DIRT TO ADJACENT AREAS.
10. INSTALL ALL WORK IN SUCH A MANNER SO AS TO BE READILY ACCESSIBLE FOR OPERATIONS, MAINTENANCE AND REPAIR.
11. ALL OPENINGS OF FLOOR SLABS SHALL BE PERFORMED BY CORE DRILLING, UNLESS NOTED.
12. ALL WORK SHALL BE CONSIDERED NEW UNLESS SPECIFICALLY NOTED AS "EXIST TO REMAIN".
13. PROVIDE SLEEVES ON ALL PIPE PENETRATION THROUGH WALLS, SLABS, FLOORS AND ROOF. ALL OPENINGS SHALL BE FIRESTOPPED WITH MATERIALS ACCEPTABLE FOR USE IN NEW YORK CITY.
14. ELECTRICAL POWER PROVISIONS FOR MECHANICAL EQUIPMENT, ARE BASED ON ONE MANUFACTURER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CHECKING ELECTRICAL RATINGS FROM CERTIFIED SHOP DRAWINGS OF EQUIPMENT AND SHALL COORDINATE WITH THE ELECTRICAL CONTRACTOR FOR REQUIRED OVERCURRENT PROTECTION REQUIREMENTS.
15. ALL MECHANICAL PLANS COMPLY WITH THE 2014 MECHANICAL CODE
16. ALL ELECTRICAL WIRING AS PER 2011 THE ELECTRICAL CODE OF THE CITY OF NEW YORK.
17. NO WORK SHALL BE INITIATED UNTIL A WORK PERMIT IS OBTAINED BY THE CONTRACTOR.
18. CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL PERMITS, EQUIPMENT USE THE NYC DEPARTMENT OF BUILDINGS FOR WORK UNDER THIS CONTRACT.
19. ALL SHIPMENTS AND DELIVERIES OF MATERIAL REQUIRING MEA/BSA NUMBERS SHALL BE ACCOMPANIED BY A CERTIFICATE OR LABEL CERTIFYING THAT THE MATERIAL SHIPPED OR DELIVERED IS EQUIVALENT TO MATERIALS TESTED AND ACCEPTABLE FOR USE, AS REQUIRED IN SECTION 27-131 (C)
20. PROVIDE NEW HYDRONIC PIPING MATERIAL (SECTION 1202), JOINTS AND CONNECTIONS (SECTION 1203), INSULATION (SECTION 1204), VALVES (SECTION 1205) AND INSTALLATION (SECTION 1206) SHALL BE IN COMPLIANCE WITH CHAPTER 12 OF 2014 NYC MECHANICAL CODE.
21. PROVIDE FLEXIBLE CONNECTION & VIBRATION ISOLATION FOR ALL FANS, PUMPS, COMPRESSORS, CONDENSERS, DUCTS, PIPING IN ACCORDANCE WITH SECTION 928.3 OF 2014 NYC MECANICAL CODE AND SPECIFICATIONS 15503 & 15504.
22. PROVIDE TESTING OF ALL NEW HYDRONIC PIPING IN ACCORDANCE WITH SECTION 1208 OF 2014 NYC MECHANICAL CODE. HYDRONIC PIPING SHALL BE TESTED HYDROSTATICALLY AT ONE AND HALF TIMES SYSTEM DESIGN PRESSURE, BUT NOT LESS THAN 100 PSI. DURATION OF EACH TEST SHALL NOT BE LESS THAN 2 HOURS.

ENERGY NOTES

1. STEAM PIPE INSULATION: 2.5 INCHES FOR PIPES <4 INCH AND 3 INCHES FOR PIPES =>4 INCH
2. ALL HVAC SYSTEMS SHALL BE BALANCED AND A BALANCING REPORT TO BE PROVIDED TO THE BUILDING OWNER FOR HVAC SYSTEM ZONES WITH TOTAL CONDITIONED AREAS.
3. EACH HVAC SYSTEM AT FAN SYSTEM DESIGN CONDITIONS SHALL NOT EXCEED THE ALLOWABLE FAN SYSTEM MOTOR NAMEPLATE HP:
   ALLOWABLE NAMEPLATE MOTOR HP < CFMS x 0.0011
   (INDIVIDUAL EXHAUST FANS WITH MOTOR NAMEPLATE HORSEPOWER OF 1 HP OR LESS ARE EXEMPT FROM THE ALLOWABLE FAN HORSEPOWER REQUIREMENT.)
4. WITHIN 90 DAYS AFTER THE DATE OF SYSTEM ACCEPTANCE, RECORD DRAWINGS OF THE ACTUAL INSTALLATION SHALL BE PROVIDED TO DCAS ENGINEERS. REFER TO SPECIFICATION SECTION 01 78 39. RECORD DRAWINGS SHALL INCLUDE AS A MINIMUM, THE LOCATION AND PERFORMANCE DATA ON EACH PIECE OF EQUIPMENT, GENERAL CONFIGURATION OF DUCT AND PIPE DISTRIBUTION SYSTEMS INCLUDING SIZES AND THE TERMINAL AIR OR WATER DESIGN FLOW RATES.
5. IN ACCORDANCE WITH SECTION BC109.9 AND ECC 104.2.3, WHERE AN INSPECTION OR TEST FAILS, THE CONSTRUCTION SHALL BE CORRECTED AND MUST BE MADE AVAILABLE FOR REINSPECTION AND/OR RETESTING BY THE PROGRESS INSPECTOR UNTIL IT COMPLIES.
6. CONSTRUCTION SCHEDULING INSTRUCTIONS, IN ACCORDANCE WITH ARTICLE 116 OF TITLE 28 AND SECTION BC109, SHALL BE SCHEDULED TO ALLOW REQUIRED PROGRESS INSPECTIONS TO TAKE PLACE, AND THAT ROOFS, CEILINGS EXTERIOR WALLS, INTERIOR WALLS, FLOORS, FOUNDATIONS, CELLARS AND ANY OTHER CONSTRUCTION SHALL NOT BE COVERED OR ENCLOSED UNTIL REQUIRED PROGRESS INSPECTIONS ARE COMPLETED OR THE PROGRESS INSPECTOR INDICATES THAT SUCH COVERING OR ENCLOSURE MAY PROCEED, AT EACH STAGE OF CONSTRUCTION AS APPLICABLE.

BUILDING DEPARTMENT NOTES

1. ALL WORK OF THIS CONTRACT SHALL BE DONE IN ACCORDANCE WITH THE LATEST EDITION OF THE NEW YORK CITY BUILDING CODE AND REGULATIONS OF OTHER AGENCIES HAVING JURISDICTION ON THE WORK OF THIS CONTRACT.
2. WORK SHALL BE EXECUTED IN FULL COMPLIANCE WITH THE APPLICABLE PROVISIONS OF ALL LAWS, BY-LAWS, STATUTES, ORDINANCES, CODES, RULES, REGULATIONS AND LAWFUL ORDERS OF PUBLIC AUTHORITIES BEARING ON THE PERFORMANCE AND EXECUTION OF THE WORK. THE CONTRACTOR SHALL PROMPTLY NOTIFY THE AUTHORITY OF ANY PORTION OF THE WORK, IN THE CONTRACT DOCUMENTS THAT ARE AT VARIANCE WITH THE ABOVE.
3. THE CONTRACTOR SHALL OBTAIN EQUIPMENT USE PERMITS FOR THE AIR CONDITIONING SYSTEM AS REQUIRED IN ACCORDANCE WITH THE BUILDING CODE.
4. THESE DRAWINGS HAVE BEEN PREPARED BY OR AT THE DIRECTION OF THE UNDERSIGNED AND TO THE BEST OF THE UNDERSIGNED'S KNOWLEDGE, INFORMATION AND BELIEF MEET THE REQUIREMENTS OF THE BUILDING CODE.
5. NO STAGING AREA WILL BE ALLOWED.
6. NO HOISTING OF EQUIPMENT DURING OFFICE WORKING HOURS.
7. TO THE BEST OF APPLICANT KNOWLEDGE, BELIEF AND PROFESSIONAL JUDGEMENT, PLANS AND APPLICATIONS ARE IN COMPLIANCE WITH THE 2016 NYC ENERGY CONSERVATION CODE
8. THE CONTRACTOR IS RESPONSIBLE FOR FILING THE APPLICATION AND OBTAINING PERMITS FOR SCAFFOLDING, SIDEWALK BRIDGING, EQUIPMENT HOISTING, ANY OTHER CONSTRUCTION EQUIPMENT OR PUBLIC PROTECTIVES REQUIRED TO ENSURE SAFETY OF OPERATION AND THE PUBLIC. AS PER SECTION CHAPTER 33 OF THE 2014 BUILDING CODE THE CONTRACTOR IS ALSO RESPONSIBLE FOR OBTAINING LETTER OF COMPLETION.
9. APPLICATION FOR CONSTRUCTION PERMITS SHALL BE PROCESSED THROUGH THE FACILITIES INSPECTION DIVISION OF THE AUTHORITY.
10. FIRE STOPPING SHALL BE INSTALLED AT ALL NEW PENETRATIONS OF FIRE RATED CONSTRUCTION AS PER SPECIFICATIONS.
11. THERE ARE NO DOB VIOLATIONS BEING CORRECTED BY THIS FILING PROPOSAL.
12. CONTRACTOR IS RESPONSIBLE FOR ROUTING OF ALL EQUIPMENT, FOR ALL NECESSARY MODIFICATIONS TO THE BUILDING IF REQUIRED AND RESTORING BUILDING TO THE ORIGINAL CONDITION.
13. M.E.A. AND B.S.A. NUMBERS FOR EQUIPMENT SHALL BE SUBMITTED AS REQUIRED BY THE BUILDING CODE.
14. THE MINIMUM SPACE TEMPERATURE TO BE MAINTAINED DURING HEATING SEASON SHALL BE IN ACCORDANCE WITH NYC BUILDING CODE.
15. MECHANICAL SYSTEMS SHALL BE TESTED IN ACCORDANCE WITH SECTION 107.3 OF THE 2014 MC AND WITNESSED BY DCAS FACILITY ENGINEERS.

SAFETY NOTES

1. SPECIAL PRECAUTIONS SHALL BE TAKEN BY THE CONTRACTOR SO THAT EQUIPMENT ON THE APPLICATION AND ITS INSTALLATION WILL NOT AFFECT THE FOLLOWING:

   EGRESS TO AND FROM THE BUILDING
   FIRE SAFETY OR CREATE A FIRE HAZARD
   STRUCTURAL SAFETY OF THE BUILDING
   ACCUMULATION OF DUST AND DEBRIS.

2. THE CONTRACTOR SHALL LEAVE THE SITE BROOM CLEAN EACH DAY.
3. IN THE EVENT ASBESTOS IS FOUND IN THE WORK AREA, WORK SHALL BE STOPPED AND THE AUTHORITY SHALL BE IMMEDIATELY NOTIFIED.
4. NO INTERRUPTION OF HEATING AND WATER SERVICES TO THE BUILDING WILL BE ALLOWED DURING CONSTRUCTION. COORDINATE REQUIRED SHUT DOWNS WITH THE DCAS BUILDING ENGINEERS.

GENERAL DEMOLITION NOTES

1. PROVIDE SELECTIVE DEMOLITION OF HVAC WORK AS INDICATED ON THE DRAWINGS. MAINTAIN CONTINUITY OF ALL SERVICES. ALL SELECTIVE DEMOLITION AND REMOVALS SHALL BE PERFORMED IN ACCORDANCE WITH ALL APPLICABLE CODES. THE REQUIREMENTS OF THE AUTHORITY, AND THE APPROVED SEQUENCE OF WORK.

2. THE DRAWINGS DO NOT PURPORT TO SHOW ALL REMOVALS. THE CONTRACTOR SHALL REMOVE ANY AND ALL OF THE MATERIALS NECESSARY FOR THE INSTALLATION OF NEW WORK AND THE CONNECTION OF EXIST. SYSTEMS TO NEW WORK.

3. THE CONTRACTOR SHALL VISIT THE PROJECT SITE AND MAKE HIS OWN ASSESSMENT OF THE EXTENT OF THE DEMOLITION WORK REQUIRED TO INSTALL NEW WORK. THE CONTRACTOR SHALL FIELD VERIFY EXIST. CONDITIONS AND BE RESPONSIBLE FOR SAME.

SHOP DRAWING NOTE:

THE HVAC CONTRACTOR SHALL PREPARE A SET OF CAD DRAWING DRAWN TO 3/8" SCALE INDICATE ALL DUCTWORK AND PIPING WORK PLUS STRUCTURAL AND ARCHITECTURAL BACKGROUND AND DELIVER TO THE GENERAL CONTRACTOR, PLUMBING, FIRE PROTECTION AND ELECTRICAL TRADES FOR COORDINATION THIS SHALL BE DONE BEFORE THE INSTALLATION OF ANY DUCT, PIPING OR EQUIPMENT. THE SHOP DRAWING SHALL INCLUDE PIPE ROUTING, SIZES, SLOPE, INVERT ELEVATION, ELEVATIONS, SLEEVES LOCATIONS AND SIZES. THE DRAWINGS SHALL CONTAIN ALL THE INFORMATION NECESSARY FOR THE PROPER INSTALLATION OF THE JOB. THE SHOP DRAWINGS SHALL BE COORDINATED WITH OTHER TRADES AND OR EXIST. PIPING OR EQUIPMENT THAT MIGHT AFFECT THE INSTALLATION. THE DESIGN DRAWINGS ARE ESSENTIALLY DIAGRAMMATIC AND ARE NOT INTENDED TO BE USED AS A SHOP DRAWING. THEREFORE A COPY OF THE DESIGN DRAWING IS NOT ACCEPTABLE AS A SHOP DRAWING. REFER TO DIVISION 1 SPECIFICATION SECTIONS FOR ADDITIONAL INFORMATION.

SUMMARY OF WORK

THE WORK INCLUDES BUT IS NOT LIMITED TO THE FOLLOWING SYSTEM, EQUIPMENTS AND SERVICES.

ECM-2:
REMOVE EXISTING SUPPLY FAN MOTOR FOR PRINTSHOP AIR HANDLING UNIT AND PROVIDE NEW PREMIUM EFFICIENCY MOTORS AND VFD STARTER.
REMOVE TWO EXISTING TOILET EXHAUST FANS MOTORS W/ STARTERS AND PROVIDE NEW PREMIUM EFFICIENCY MOTORS AND VFD STARTER.

ECM-8:
PROVIDE TESTING AND BALANCING FOR SEVEN (7) EXIST. AIR HADNLING UNITS SERVING MARRIAGE BUREAU; ONE (1) AIR HANDLING UNIT SERVING PRINTSHOP; TWO (2) TOILET EXHAUST FANS.
PROVIDE TESTING AND BALANCING FOR PRINTSHOP CHILLED WATER LOOP;

ECM -N1:
PROVIDE CONDENSATE HEAT RECOVERY SYSTEMS FOR DOMESTIC HOT WATER HEATING.

ECM-N2:
PROVIDE TESTING OF NEW BMS SYSTEM FOR PRINTSHOP AIR HANDLING UNIT.

COMMISSIONING NOTES

1. FOR COMPLIANCE WITH SYSTEM COMMISSIONING REQUIREMENTS OF THE ASHRAE 90.1 2013, THE CONTRACTOR SHALL FOLLOW 2016 NYCECC SECTION C408 & SPECIFICATION SECTION FOR COMMISSIONING REQUIREMENTS FOR IMPLEMENTATION OF COMMISSIONING OF SYSTEMS, SUBSYSTEMS AND EQUIPMENT BEING COMMISSIONED.
2. THE CONTRACTOR IS TO PROVIDE SUPPORT AND ACCESS TO WORK AND TIMELY NOTIFICATION TO ALLOW SUCH INSPECTIONS TO PROCEED.
3. THE CONTRACTOR IS RESPONSIBLE FOR, BUT NOT LIMITED TO, THE FOLLOWING
   a. ENSURE THE SUB-CONTRACTORS AND MANUFACTURER'S PROVIDING SERVICES FOR THE CONTRACTOR PERFORM THEIR REQUIRED TASKS.
   b. COORDINATE WITH THE COMMISSIONING AUTHORITY (CXA) TO PROVIDE SERVICES PER COMMISSIONING PLAN.
   c. COORDINATE INSPECTIONS, SPECIAL TESTS, DEMONSTRATIONS AND START-UPS DETAILS AS REQUIRED BY THE CONTRACT.
   d. PROVIDE TECHNICIANS WHO ARE FAMILIAR WITH THE CONSTRUCTION AND OPERATION OF INSTALLED SYSTEMS AND WHO SHALL BE ON CALL FOR START-UP ORIENTATION AND TURN-OVER OPERATIONS.
   e. PROVIDE ALL REQUIRED DOCUMENTATION, INCLUDING BUT NOT LIMITED TO OPERATING AND MAINTENANCE MANUAL INCLUDING BUT NOT LIMITED TO SUBMITTAL DATA, NAME AND ADDRESS OF SERVICE AGENCY, WIRING DIAGRAMS, CONTROL SEQUENCE, SYSTEM PROGRAMMING INSTRUCTIONS AND SEQUENCE OF OPERATION.
   f. PROVIDE ORIENTATION AND ORIENTATION DATA AS REQUIRED BY CONTRACT.
   g. PROVIDE WARRANTIES, GUARANTEES CERTIFICATIONS AND TEST DATA AS REQUIRED BY CONTRACT.
   h. PROVIDE BALANCING REPORT AS PER SECTION C 408.2.5.3 OF THE 2016 NYCECC AND THE 2014 NYC MECHANICAL CODE.
4. THE CONTRACTOR INCLUDING ITS SUB-CONTRACTORS AND MANUFACTURER REPRESENTATIVE'S IS TO COMPLY WITH THE SYSTEM COMMISSIONING PROCESS AND COMPLETION REQUIREMENTS AND PROVIDE ALL REQUIRED DOCUMENTATION IN ACCORDANCE WITH SECTION C408 AND THE CONTRACT DOCUMENTS.
5. THE COMMISSIONING PLAN, IN ACCORDANCE WITH SECTION C408.2.1 IS DEVELOPED BY THE CXA.
6. PRIOR TO PASSING THE FINAL MECHANICAL INSPECTION, THE CXA WILL PROVIDE EVIDENCE OF MECHANICAL SYSTEMS COMMISSIONING AND COMPLETION IN ACCORDANCE WITH SECTIONS C408.2.4 AND C408.2.5 AND EN-DRAWINGS. THE BUILDINGS, OR PORTIONS THEREOF, SHALL NOT PASS THE FINAL MECHANICAL INSPECTION UNTIL SUCH TIME.
7. FINAL COMMISSIONING REPORTS - WITH RESULTS OF THE FUNCTIONAL PERFORMANCE TESTS. ANY DEFICIENCIES FOUND DURING TESTING SHALL BE IDENTIFIED AND REPORTED TO CM FOR DIRECTION.
8. DEFICIENCIES WHICH ARE OBSERVED TO EXIST IN ORIGINAL EXIST TO REMAIN SYSTEMS, EQUIPMENT, COMPONENTS, BEYOND THE SCOPE OF THIS WORK OR WHICH AFFECT THE SCOPE OF THIS WORK, SHALL BE IDENTIFIED BY THE CONTRACTOR PRIOR TO COMMENCEMENT OF WORK AND SHALL BE PRESENTED TO PROJECT MANAGEMENT AND DCAS FOR RESOLUTION.

DOB APPROVAL STAMP

Lighting & HVAC Energy Efficiency Upgrades - Louis J. Lefkowitz Building

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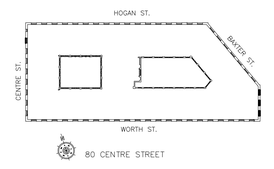
SITE PLAN



BLOCK: 166 LOT: 27

REVISIONS:

NUMBER	DESCRIPTION	DATE
4.	ISSUED FOR BID	6/23/2021
3.	COMPLIANCE SUBMISSION	3/26/2021
2.	100% CD SUBMISSION	1/26/2021
1.	DOB SUBMISSION	4/17/2020

Department of Design and Construction

DIVISION OF PUBLIC BUILDINGS

CAPITAL PROJECT NUMBER:
E17-0001

PROJECT
Lighting & HVAC Energy Efficiency Upgrades - Louis J. Lefkowitz Building
80 Centre Street, New York, NY, 10013

FOR THE: NYC Department of Citywide Administrative Services

DRAWING TITLE:
GENERAL NOTES, SYMBOLS AND ABBREVIATIONS

SEAL & SIGNATURE

DATE:	23 JUNE, 2021
PROJECT NO:	E17-0001
DRAWN BY:	RUNCI MA
CHECKED BY:	RAVI SHENOY
DRAWING NUMBER:	M-001.00
CADO FILE No:	06 OF 63

EXIST. PRINTSHOP AHU SCHEDULE (EXIST UNIT TO REMAIN. FAN MOTOR TO BE REPLACE)

			AHU-PS-1
LOCATION			BASEMENT MECHANICAL ROOM
SEVICE			PRINTSHOP
FAN	CFM		5000 CFM
	EXT. SP		1.5 IN.WC
	RPM		3347
	BHP/HP		6.1 / 7.5
	DRIVE		VARIABLE PITCH DRIVE
	TYPE		DRAW-THROUGH
COOLING COIL	AIR DATA	OA CFM	5000
		EAT/LAT (FDB)	95/52.71
		EAT/LAT (FWB)	75/52.45
		TOTAL (MBH)	375.8
		SENSIBLE (MBH)	231.23
		MAX P.D. (IN WG)	1.25
		MAX VEL. (FPM)	503.5
	CHILLED WATER DATA	FLOW GPM	76.3
		EWT/LWT (°F)	42/51.82
		MAX P.D. (FT)	5.1
		MIN. NO. ROWS.	8
HEATING COIL	AIR	TOTAL (MBH)	237.3
		MAX P.D. (FT)	0.07
		EAT/LAT (°F)	52/95.94
	STEAM	FLOW LBS/HR	247.17
		PSIG	5
	ROWS		1
	MAX. FACE VEL (FPM)		512.8
NEW MOTOR	HP		7.5
	DRIVE		VFD
	MINIMUM EFFICIENCY		91.7%
ELECT.	VOLTS		208
	STATER	TYPE	VFD
		SWITCHES	-
MANUFACTURE			CARRIER
MODEL			39MN

NOTES:
1. PROVIDE PREMIUM EFFICIENCY MOTOR FOR EXIST. AHU SUPPLY FAN. PROVIDE VFD -VARIABLE FREQUENCY OR VARIABLE VOLTAGE SPEED DRIVE WITH HARMONIC NOISE FILTERS, BYPASS, TRANSFORMER,HOAP SWITCHES, AS APPROVED BY EQUIPMENT MANUF.
2. NEW MOTOR SHALL BE PREMIUM EFFICIENCY TYPE AND MEET NEMA PREMIUM EFFICIENCY MOTOR REQUIREMENT AND NYC EPP 6-12. ELECTRIC MOTORS REQUIREMENT
3. PROVIDE TRAVERSE CFM MEASUREMENTS AT UNIT TO MATCH EXIST.

EXIST. TOILET EXHAUST FAN SCHEDULE (EXIST. FAN TO REMAIN. MOTORS TO BE REPLACED)

TAG NO.	AREA SERVED	LOCATION	EXIST. FAN PERFORMANCE DATA						EXIST. MOTOR									NEW MOTOR								
			CFM	TOTAL S.P (IN. W.G.)	RPM	MANUF. AS STD. MODEL	TYPE	DRIVE	RPM	BHP.	HP.	VOLTS	PHASE	Hz	STARTER	MIN. EFFICIENCY	REMARKS	RPM	BHP.	HP.	VOLTS	PHASE	Hz	STARTER	MIN. EFFICIENCY	REMARKS
EF-1	TOILETS	NINTH FLOOR	10800	1	709	PEERLESS 330	CENTRIFUGAL	BELT	1750	4.6	5	208	3	60	VFD	89.5%	SEE NOTES	1750	6.9	7.5	208	3	60	VFD	91.7%	SEE NOTES
EF-2	TOILETS	NINTH FLOOR	10800	1	709	PEERLESS 330	CENTRIFUGAL	BELT	1750	4.6	5	208	3	60	VFD	89.5%	SEE NOTES	1750	6.9	7.5	208	3	60	VFD	91.7%	SEE NOTES

NOTES:
1. EQUIPMENT INFORMATION BASED ON MANUFACTURE EQUIPMENT CUT.
2. ALL MOTORS SHALL BE PREMIUM EFFICIENCY TYPE WITH VFD -VARIABLE FREQUENCY OR VARIABLE VOLTAGE SPEED DRIVE WITH HARMONIC NOISE FILTERS, BYPASS, TRANSFORMER, HOAP SWITCHES.
3. NEW MOTOR SHALL MEET NEMA PREMIUM EFFICIENCY MOTOR REQUIREMENT AND NYC EPP 6-12. ELECTRIC MOTORS REQUIREMENT.
4. PROVIDE TIME CLOCK FOR EACH EXHAUST FAN OPERATION.
5. PROVIDE TRAVERSE CFM MEASUREMENTS AT UNIT TO MATCH EXIST.

STEAM VALVE SCHEDULE

TAG NO.	LOCATION	SERVICE	MAX. PD (PSIG)	CAPACITY (LBS/HR)	VALVE DATA		REMARKS
					SIZE	MANUF./MODEL OR EQUAL	
SCV	PRINT SHOP	PRINT SHOP HUMIDIFIER	3	35	1"	TAC VB-SERIES	SEE NOTES
HCV-A	PRINT SHOP	PRINT SHOP AHU HEATING COIL	2	160	2"	TAC VB-SERIES	SEE NOTES
HCV-B	PRINT SHOP	PRINT SHOP AHU HEATING COIL	2	80	1"	TAC VB-SERIES	SEE NOTES

NOTES:
1. REFER TO PLANS FOR QUANTITIES
2. PROVIDE CONTROL-ACTUATOR WIRING, COMPLETE WITH VALVE ACTUATOR, CHANGEOVER/CONTROL RELAY, TRANSMITTER, TRANSFORMER.
3. ALL VALVES SHALL HAVE THREADED JOINTS.
4. REFER TO SPECIFICATION FOR FURTHER INFORMATION.

HYDRONIC VALVE SCHEDULE

TAG	LOCATION	SERVICE	CAPACITY MBH	GPM	MAX PD	MFR OR EQUAL	MODEL SIZE	REMARKS
CCV	BASEMENT MECHANICAL ROOM	PRINTSHOP AHU COOLING COIL	N/A	80	5	TAC	VB SERIES	SEE NOTES

NOTES:
1. PROVIDE CONTROL-ACTUATOR WIRING, COMPLETE WITH VALVE ACTUATOR, CHANGEOVER/CONTROL RELAY, TRANSMITTER, TRANSFORMER.
2. ALL VALVES SHALL HAVE THREADED JOINTS.
3. REFER TO SPECIFICATION FOR FURTHER INFORMATION.

DOB APPROVAL STAMP

Lighting & HVAC Energy Efficiency Upgrades - Louis J. Lefkowitz Building

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Cost Estimate Consultant:
ELLANA INC.
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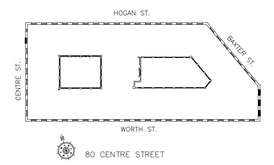
SITE PLAN



BLOCK: 166 LOT: 27

REVISIONS:

NUMBER	DESCRIPTION	DATE
4.	ISSUED FOR BID	6/23/2021
3.	COMPLIANCE SUBMISSION	3/26/2021
2.	100% CD SUBMISSION	1/26/2021
1.	DOB SUBMISSION	4/17/2020

Department of Design and Construction

DIVISION OF PUBLIC BUILDINGS

CAPITAL PROJECT NUMBER:
E17-0001

PROJECT
Lighting & HVAC Energy Efficiency Upgrades - Louis J. Lefkowitz Building
80 Centre Street, New York, NY, 10013

FOR THE: NYC Department of Citywide Administrative Services

DRAWING TITLE:
MECHANICAL SCHEDULES - 1

SEAL & SIGNATURE

DATE: 23 JUNE, 2021
PROJECT NO: E17-0001
DRAWN BY: RUNCI MA
CHECKED BY: RAVI SHENOY
DRAWING NUMBER:
M-002.00
CADO FILE No:
07 OF 63

EXIST. PRINTSHOP PUMP SCHEDULE
(EXIST EQUIPMENT TO REMAIN)

UNIT NO.	LOCATION	SYSTEM SERVED	MFG	PRESSURE RATING	MODEL	FLUID DATA			MOTOR DATA					PUMP TYPE
						WATER TEMP. (°F)	GPM	TOTAL DYNAMIC HEAD(FT.)	BHP	HP	VOLT/ PHASE	RPM	EFFICIENCY (%)	
P-PS-1	BASEMENT MECHANICAL ROOM	CHILLED WATER	ARMSTRONG	175 SWP	4030, 3X2X13, BF	54	150	115	10.9	15	208/3	1800	-	END SUCTION
P-PS-2 (STAND-BY)	BASEMENT MECHANICAL ROOM	CHILLED WATER	ARMSTRONG	175 SWP	4030, 3X2X13, BF	54	150	115	10.9	15	208/3	1800	-	END SUCTION

NOTE: EQUIPMENT INFORMATION BASED ON MANUFACTURE EQUIPMENT CUT.
INFORMATION FOR EXIST. EQUIPMENT INCLUDED FOR BALANCING INFORMATION

EXIST. PRINTSHOP AIR COOLED CHILLER SCHEDULE
(EXIST EQUIPMENT TO REMAIN)

UNIT NO	LOCATION	SERVICE	RATED TONS	CHILLER (40% GLYCOL)				COMPRESSOR					CONDENSER		ELECTRICAL			REFRIG. TYPE	CAPACITY (BTUH)	MFR	MODEL
				GPM	E.W.T. F	L.W.T. F	MAX P.D. FT	TYPE	COMP QTY	MAX HP EACH COMP	FLA EACH COMP	RLA EACH COMP	QTY FAN @ FLA	AMBIENT DB	VOLT PH HZ	MCA	MOP				
ACCH-PS-1	ROOF	PRINTHSOP	75.6	200	54	44	-	SCROLL	2	-	-	-	6	95	208 3 60	347.6	450	R134A	960,000	CARRIER	30XAA0807J-02R7U

NOTE: EQUIPMENT INFORMATION BASED ON MANUFACTURE EQUIPMENT CUT.
INFORMATION FOR EXIST. EQUIPMENT INCLUDED FOR BALANCING INFORMATION

EXIST. PRINTSHOP FANCOIL UNIT SCHEDULE
(EXIST EQUIPMENT TO REMAIN)

UNIT NO.	LOCATION AND AREA SERVED	CFM	HEATING PERFORMANCE		COOLING PERFORMANCE DATA				SELECTION DATA		SUPPLY FAN MOTOR		
			KW	EAT/LAT	MBH	EWT/LWT		EAT/LAT	MANUF. AS STAND.	MODEL	VOLT	P.H.	H.P.
						°F	GPM	°F					
FCU-1	PRINTSHOP	2000	5	75/82	150	42/52	30	75/55	CARRIER	42-BHC	120	1	1/12
FCU-2	PRINTSHOP	2000	5	75/82	150	42/52	30	75/55	CARRIER	42-BHC	120	1	1/12
FCU-3	PRINTSHOP	2000	5	75/82	150	42/52	30	75/55	CARRIER	42-BHC	120	1	1/12
FCU-4	PRINTSHOP	2000	5	75/82	150	42/52	30	75/55	CARRIER	42-BHC	120	1	1/12

NOTE: EQUIPMENT INFORMATION BASED ON MANUFACTURE EQUIPMENT CUT.
INFORMATION FOR EXIST. EQUIPMENT INCLUDED FOR BALANCING INFORMATION

EXIST. PRINTSHOP EXHAUST FAN
(EXIST EQUIPMENT TO REMAIN)

TAG NO.	AREA SERVED	LOCATION	EXIST. FAN PERFORMANCE DATA						EXIST. MOTOR						
			CFM	TOTAL S.P. (IN. W.G.)	RPM	MANUF. AS STD. MODEL	TYPE	DRIVE	RPM	BHP.	HP.	VOLTS	PHASE	Hz	REMARKS
EF-PS-1	PRINTSHOP TOILETS	ROOF	460	1	1795	TWIN CITY BCRD	CENTRIFUGAL	BELT	1750	0.12	1/4	208	1	60	SEE NOTES
EF-PS-2	PRINTSHOP	ROOF	4800	1.25	810	TWIN CITY BCRD	CENTRIFUGAL	BELT	1750	1.7	5	208	3	60	SEE NOTES

NOTE: EQUIPMENT INFORMATION BASED ON MANUFACTURE EQUIPMENT CUT.
INFORMATION FOR EXIST. EQUIPMENT INCLUDED FOR BALANCING INFORMATION

DOB APPROVAL STAMP

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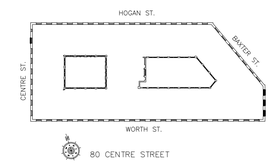
SITE PLAN



BLOCK: 166 LOT: 27

REVISIONS:

NUMBER	DESCRIPTION	DATE
4.	ISSUED FOR BID	6/23/2021
3.	COMPLIANCE SUBMISSION	3/26/2021
2.	100% CD SUBMISSION	1/26/2021
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Department of Design and Construction

DIVISION OF PUBLIC BUILDINGS

CAPITAL PROJECT NUMBER:
E17-0001

PROJECT
Lighting & HVAC Energy Efficiency Upgrades - Louis J. Lefkowitz Building
80 Centre Street, New York, NY, 10013

FOR THE: NYC Department of Citywide Administrative Services

DRAWING TITLE:
MECHANICAL SCHEDULES - 2

SEAL & SIGNATURE

DATE: 23 JUNE, 2021
PROJECT NO: E17-0001
DRAWN BY: RUNCI MA
CHECKED BY: RAVI SHENOY
DRAWING NUMBER:
M-003.00
CADO FILE No:

HOT WATER HEAT EXCHANGER SCHEDULE

TAG	SERVICE	LOCATION	MANUFACTURER & MODEL NO. (AS STANDARD)	TUBE SURFACE (SQ. FT)	CAPACITY MBH	TYPE	DOMESTIC WATER			CONDENSATE RETURN				DIMENSIONS W X H X D	WEIGHT (LBS)
							GPM	TEMP EWT °F	TEMP LWT °F	GPM MIN	GPM MAX	TEMP EWT °F	TEMP LWT °F		
CRHX-1	BLDG DOM. HOT WATER	PUMP ROOM	ARMSTRONG DIGITAL-FLO	AS REQD	-	PLATE AND FRAME	65	70	80	10	-	135	115	36X106X59	-

NOTES:
1. PROVIDE 4" REINFORCED CONCRETE PAD PER EQUIPMENT DIMENSION. PROVIDE PAD 3" LARGER THAN EQUIPMENT FOOTPRINT ON ALL SIDES.
2. UNIT SHALL INCLUDE ELECTRONIC CONTROLS, CONTROL PANELS AND CIRCULATORS.

CONTROL VALVE SCHEDULE

ITEM	SERVICE	LOCATION	MANUFACTURER & MODEL NO.	SERVICE TYPE	VALVE BODY	VALVE TYPE	VALVE SIZE	FAIL POSITION	GPM	DELTA (P)	CALC. CV
1	AHU-PS-1	PRINT SHOP	BELIMO OR EQUAL	CHW	BRONZE	2-WAY	2-1/2"	FAIL OPEN	76.3	2.21	51.32

NOTES: FINAL VALVE SELECTION SHALL BE AS PER SPECIFICATION 230900-2.08-D.

VACUUM PUMP SCHEDULE

UNIT NO.		VAC-1
TYPE		DUPLEX
CAPACITY, SQ. FT. EDR		65,000
MINIMUM SIMULTANEOUS CAPACITIES	WATER GPM	63
	AIR CFM	42
WATER DISCHARGE PRESSURE (PSI)		23.66
WATER PUMP MOTOR (HP) / RPM		5
VACUUM PUMP SUCTION (IN. HG.)		5 1/2"
VACUUM PUMP MOTOR (HP) / RPM		5
CONDENSATE RECEIVER TANK (GALLONS)		209
ELECTRICAL DATA (VOLT / PH / HZ)		208 / 3 /60
UNIT DIMENSIONS (L x W x H)		92X74X58
HOUSEKEEPING CONC. PAD DIMENSIONS (L x W x H)		98 x80 x 6
OPERATING WEIGHT (LBS.)		10,000
MFR / MODEL		SKIDMORE JVC SERIES

NOTES:
1. PROVIDE PRE-WIRED, PRE-PIPED, PACKAGED SYSTEM WITH NEMA 2 CONTROL PANEL, DISCONNECT SWITCHES, MAGNETIC STARTERS, SELECTOR SWITCHES, FLOAT SWITCHES, TRANSFORMER, LEAD/LAG, ALTERNATOR
2. CONTRACTOR SHALL PROVIDE ALL RIGGING, FIELD DISASSEMBLY/REASSEMBLY OF UNIT TO DELIVER UNIT INTO THE BUILDING. UNIT SHALL BE INSPECTED BY THE MANUFACTURERS REPRESENTATIVE FOR PROPER UNIT ASSEMBLY AND START-UP.
3. PROVIDE 4" REINFORCED CONCRETE PAD PER EQUIPMENT DIMENSION. PROVIDE PAD 3" LARGER THAN EQUIPMENT FOOTPRINT ON ALL SIDES.

VACUUM PUMP SIZING CALCULATION

MARRIAGE BUREAU HEATING SYSTEM: (HYDRONIC HEATING SYSTEM)	2115	MBH
BUILDING PERIMETER HEATING (FIN TUBE RADIATORS)	49610	EDR
BUILDING TOTAL CONNECTED LOAD MARRIAGE BUREAU + BUILDING PERIMETER HEATING	14606	LBS/HR
BUILDING TOTAL CONNECTED LOAD (GPM)	29	GPM
BUILDING TOTAL CONNECTED LOAD MARRIAGE BUREAU + BUILDING PERIMETER HEATING (EDR)	58894	EDR
PUMP FLOW RATE = 2 X GPM	58	GPM
RECEIVER SIZE = GPM X 5 MIN	145	GAL
CFM (EXISTING SYSTEM) = EDR / 1000 SQFT X 0.7	35	CFM

DOB APPROVAL STAMP

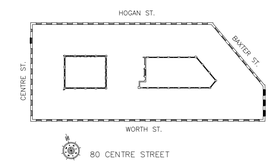
Lighting & HVAC Energy Efficiency Upgrades - Louis J. Lefkowitz Building

MEP Engineers:
SHENOY ENGINEERING, PC
39 US HWY 46 E, SUITE 802
PINEBROOK, NJ, 07058
(973)808-4090 phone
(973)808-4095 fax

Architect
CAPLES JEFFERSON
ARCH. 37-18 Northern Blvd.
Ste 319 Long Island City, NY
11101 Tel: 212.779.9772

Cost Estimate Consultant:
ELLANA INC.
32 BROADWAY, 8TH
FLOOR NEW YORK, NY
10004 TEL 212 971 0936

SITE PLAN



BLOCK: 166 LOT: 27

REVISIONS:

NUMBER	DESCRIPTION	DATE
4.	ISSUED FOR BID	6/23/2021
3.	COMPLIANCE SUBMISSION	3/26/2021
2.	100% CD SUBMISSION	1/26/2021
1.	DOB SUBMISSION	4/17/2020

Department of Design and Construction

DIVISION OF PUBLIC BUILDINGS

CAPITAL PROJECT NUMBER:
E17-0001

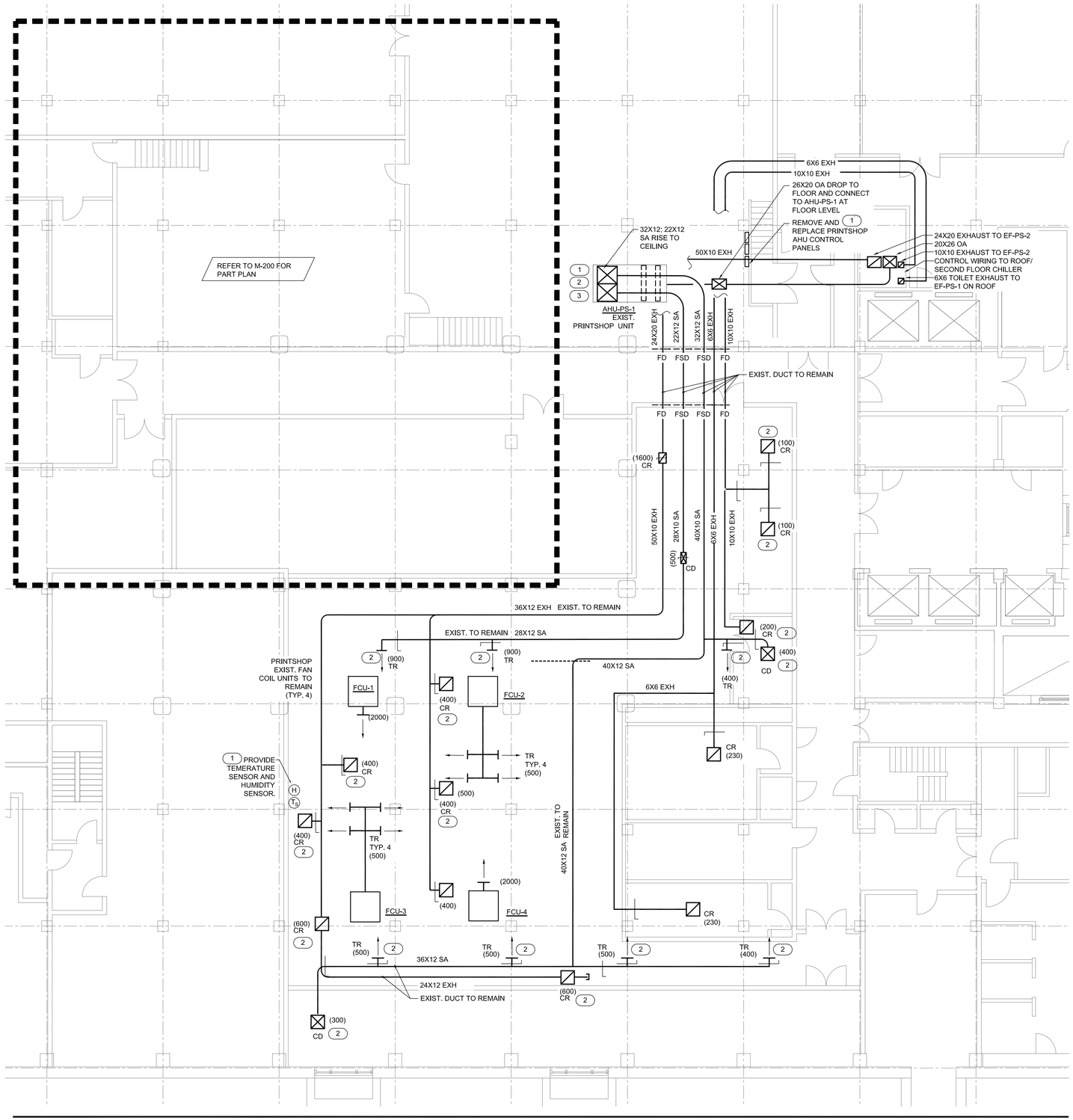
PROJECT
Lighting & HVAC Energy Efficiency Upgrades - Louis J. Lefkowitz Building
80 Centre Street, New York, NY, 10013

FOR THE: NYC Department of Citywide Administrative Services

DRAWING TITLE:
MECHANICAL SCHEDULES - 3

SEAL & SIGNATURE

DATE: 23 JUNE, 2021
PROJECT NO: E17-0001
DRAWN BY: RUNCI MA
CHECKED BY: RAVI SHENOY
DRAWING NUMBER:
M-004.00
CADO FILE No:
09 OF 63



EXIST. BASEMENT PRINT SHOP DUCTWORK PLAN 1

SCALE: 1/8"=1'-0"

0 4' 28'

4' 12'

GENERAL NOTES

1. REFER TO M001 FOR SYMBOLS, NOTES AND ABBREVIATIONS.
2. REFER TO M102 AND M300 FOR HYDONIC BALANCING REQUIREMENTS.

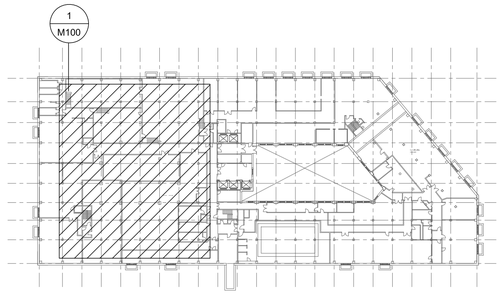
KEY NOTES

(1) 1. COMPLETELY REMOVE EXISTING BMS SYSTEM SERVING THE SPACE. REMOVE ALL (GUT) EXISTING UNIT CONTROLS FOR AIR HANDLING UNIT, FOUR (4) FAN COIL UNITS ASSOCIATED CHILLER AND EXHAUST FAN AND REPLACE WITH NEW NATIVE BACNET CONTROLLERS, AND ALL VALVES, DAMPERS, SENSORS AND DEVICES.
2. PROVIDE NEW COMPLETE STAND-ALONE BMS SYSTEM WITH NEW FRONT END (HMI) WORKSTATION, CENTRAL SERVER, ROUTERS, SOFTWARE AND PROGRAMMING.
3. PROVIDE NEW UNIT LEVEL CONTROLLERS, SENSORS. DEVICES WITH ASSOCIATED WIRING AND CONNECT TO EXISTING DDC CMNET NETWORK. POINT OF CONNECTION AND INTEGRATION TO NETWORK TO BE COORDINATED WITH AUTOMATED LOGIC CONTROLS ALC. PROVIDE ALL SOFTWARE PROGRAMMING TO INTEGRATE NEW CONTROLLERS FOR FULL CONTROL AND MONITOR OF SYSTEMS THROUGH EXISTING HMI WORKSTATION IN BUILDING MANAGERS OFFICE.
4. PROVIDE UPGRADING TO THE EXISTING DDC CMNET NETWORK WEBCTRL SOFTWARE LICENSE TO ADD NEW CONTROLLERS TO THE SYSTEM.
5. REFER TO CONTROL DIAGRAMS DRAWINGS FOR DETAILS

(2) PROVIDE THE BELOW SCOPE OF WORK AND REPORT FOR THE TESTING AND MEASUREMENT SCOPE, IN NEBB FORMAT, SUBMITTED TO PROJECT MANAGER, DEFICIENCIES, BEYOND THE SCOPE OF THIS WORK, SHALL BE INDICATED IN THE REPORT, TO BE PROVIDED TO BUILDING OWNER, DCAS FOR MAINTENANCE WORK. PROVIDE THE FOLLOWING. REFER TO DIVISION 23 SPECIFICATIONS FOR OTHER SCOPE OF WORK

1. MEASURE THE SUPPLY, RETURN AND/OR EXHAUST FAN AIR FLOW RATES AT THE UNITS.
2. MEASURE THE AIR FLOW FROM ALL DUCTED AIR INLETS AND OUTLETS.
3. MEASURE SUPPLY / EXHAUST FAN TOTAL PRESSURES, INTERNAL COMPONENT PRESSURE DROPS, RUNNING MOTOR AMPS, VOLTS AND ROTATIONAL SPEEDS (RPM).
4. PROVIDE A COMPREHENSIVE REPORT FOR THE LISTED TESTING AND MEASUREMENT WORK, INCLUDING A MARK-UP OF EXISTING DRAWINGS. INCLUDE ANY OBSERVED DEFICIENCY AND LOCATION. PROVIDE A COMPLETE SYSTEM-WIDE REPORT. REPORTING SHALL BE ON NATIONAL ENVIRONMENTAL BALANCE BUREAU (NEBB) FORMS.
5. PROVIDE ADJUSTING AND BALANCING OF AIR SYSTEMS INCLUDE BUT NOT BE LIMITED TO THE FOLLOWING.
   - 5.1. ADJUST FAN RPM TO DESIGN REQUIREMENTS.
   - 5.2. ADJUST SYSTEM FOR DESIGN SUPPLY, TRANSFER AND RETURN AIRFLOW RATE.
   - 5.3. ADJUST SYSTEM FOR MINIMUM AND MAXIMUM (ECONOMIZER) DESIGN FLOW RATES OF OUTSIDE AIR.
   - 5.4. ADJUST ALL MAIN SUPPLY, RETURN, RELIEF, AND EXHAUST AIR DUCTS TO PROPER DESIGN FLOW RATE.
   - 5.5. ADJUST EACH DIFFUSER, GRILLE AND REGISTER.
   - 5.6. ALL DIFFUSERS, GRILLES AND REGISTERS SHALL BE ADJUSTED TO MINIMIZE DRAFTS IN ALL AREAS.

(3) REMOVE EXISTING AHU MOTOR AND REPLACE WITH NEW PREMIUM EFFICIENCY MOTOR. REPLACEMENT SHALL INCLUDE BELTS, PULLEYS, ASSOCIATED, ATTACHMENTS, SUPPORTS, ACCESSORIES, WIRING, SIZED AND RECOMMENDED BY ORIGINAL AHU MANUFACTURER.



KEY PLAN

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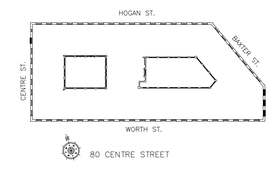

BLOCK: 166 LOT: 27

REVISIONS:

NUMBER	DESCRIPTION	DATE
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Department of Design and Construction

DIVISION OF PUBLIC BUILDINGS

CAPITAL PROJECT NUMBER:
E17-0001

PROJECT
Lighting & HVAC Energy Efficiency Upgrades - Louis J. Lefkowitz Building
80 Centre Street, New York, NY, 10013

FOR THE: NYC Department of Citywide Administrative Services

DRAWING TITLE:
MECHANICAL - BASEMENT PART PLAN-1

SEAL & SIGNATURE

DATE:	23 JUNE, 2021
PROJECT NO:	E17-0001
DRAWN BY:	RUNCI MA
CHECKED BY:	RAVI SHENOY
DRAWING NUMBER:	M-100.00
CADO FILE No:	10 OF 63

REFER TO M-200 FOR PART PLAN

EXIST. LPS FROM LPS PRV-2 (EXIST. TO REMAIN)

(2) P-PS-1 (2) P-PS-2

EXIST. PRINTSHOP CHILLED WATER PUMPS

4" CHWS/CHWR EXIST. TO REMAIN

4" CHWS/CHWR UP TO ROOF (EXIST. TO REMAIN)

AHU-PS-1 (2) EXIST. PRINTSHOP UNIT

3" CHWS/CHWR 1" LPS (EXIST. TO REMAIN)

4" HHWR
4" HHWS (EXIST. TO REMAIN)

MARRIAGE BUREAU HYDRONIC HEATING LOOP

1 1/4" HHWS&R UP TO UH-1

(EXIST. TO REMAIN)
3" CHWS/CHWR 1" LPS

(EXIST. TO REMAIN)
2" CHWS/CHWR

EXIST. PRINTSHOP FAN COIL UNITS TO REMAIN (TYP. 4)

FCU-1 (2)

FCU-2 (2)

2" CHWS/CHWR (EXIST. TO REMAIN)

STEAM HUMIDIFIER

REMOVE AND REPLACE EXISTING STEAM CONTROL TRAPS, VALVES AND DAMPER ACTUATORS (1)

(1) REMOVE AND REPLACE EXISTING STEAM CONTROL VALVES AND TRAPS. REFER TO PIPING DETAILS (TYP.).

1" LPR
1" CD (EXIST. TO REMAIN)

2" CHWS/CHWR (EXIST. TO REMAIN)

FCU-3 (2)

FCU-4 (2)

STEAM HUMIDIFIER (EXIST. TO REMAIN)

4" HHWR
4" HHWS (EXIST. TO REMAIN)

MARRIAGE BUREAU HYDRONIC HEATING LOOP

(EXIST. TO REMAIN)
4" HHWR
4" HHWS
1"CHWS
1"CHWR
1 1/4" CD (EXIST. TO REMAIN)

(EXIST. TO REMAIN)
2 1/2" HHWR
2 1/2" HHWS
2"CHWS
2"CHWR
1 1/4" CD

(EXIST. TO REMAIN)
3" HHWR
3" HHWS
2 1/2"CHWS
2 1/2"CHWR
1 1/4" CD

1" HHWR
1" HHWS
1"CHWS
1"CHWR
1"CD (EXIST. TO REMAIN)
UP TO MARRIAGE BUREAU (TYP)

1" HHWR
1" HHWS
1"CHWS
1"CHWR
1"CD (EXIST. TO REMAIN)
UP TO MARRIAGE BUREAU (TYP)

REFER TO M102 FOR CONTINUATION

REFER TO M102 FOR CONTINUATION

GENERAL NOTES

1. REFER TO M001 FOR SYMBOLS, NOTES AND ABBREVIATIONS.
2. PROVIDE NEW PIPING SECTION, VALVES, FITTINGS, INSULATION, SUPPORTS, CONTROL AND POWER WIRING AND HOOK-UP TO EQUIPMENT INDICATED. REFER TO PIPING DIAGRAM FOR DETAILS

KEY NOTES

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4. FLOW RATE THROUGH COIL WITH CONTROL VALVE MANUALLY WIDE OPEN.
5. RECORD OPERATING SUCTION AND DISCHARGE PRESSURES OF EACH PUMP AND FINAL TOTAL DYNAMIC HEAD AND RATED AMPERAGE VERSUS ACTUAL AMPERAGE OF PUMP MOTORS.
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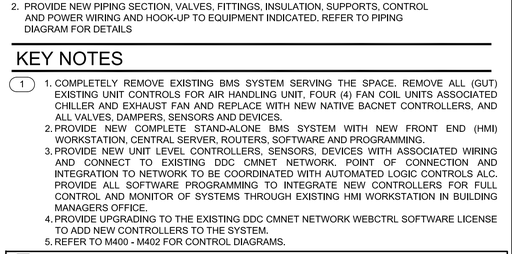
1 / M101



KEY PLAN

BASEMENT EXISTING PIPING PART PLAN 1

SCALE: 1/8"=1'-0"

0 4' 12' 28'

DOB APPROVAL STAMP

Lighting & HVAC Energy Efficiency Upgrades - Louis J. Lefkowitz Building

MEP Engineers:
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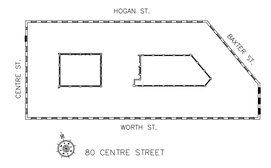

BLOCK: 166 LOT: 27

REVISIONS:

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2.	100% CD SUBMISSION	1/26/2021
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Department of Design and Construction

DIVISION OF PUBLIC BUILDINGS

CAPITAL PROJECT NUMBER:
E17-0001

PROJECT
Lighting & HVAC Energy Efficiency Upgrades - Louis J. Lefkowitz Building
80 Centre Street, New York, NY, 10013

FOR THE: NYC Department of Citywide Administrative Services

DRAWING TITLE:
MECHANICAL - BASEMENT PART PLAN - 2

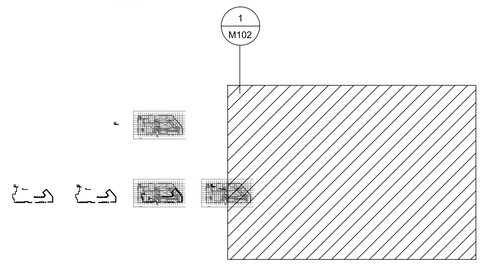
SEAL & SIGNATURE

DATE:	23 JUNE, 2021
PROJECT NO:	E17-0001
DRAWN BY:	RUNCI MA
CHECKED BY:	RAVI SHENOY

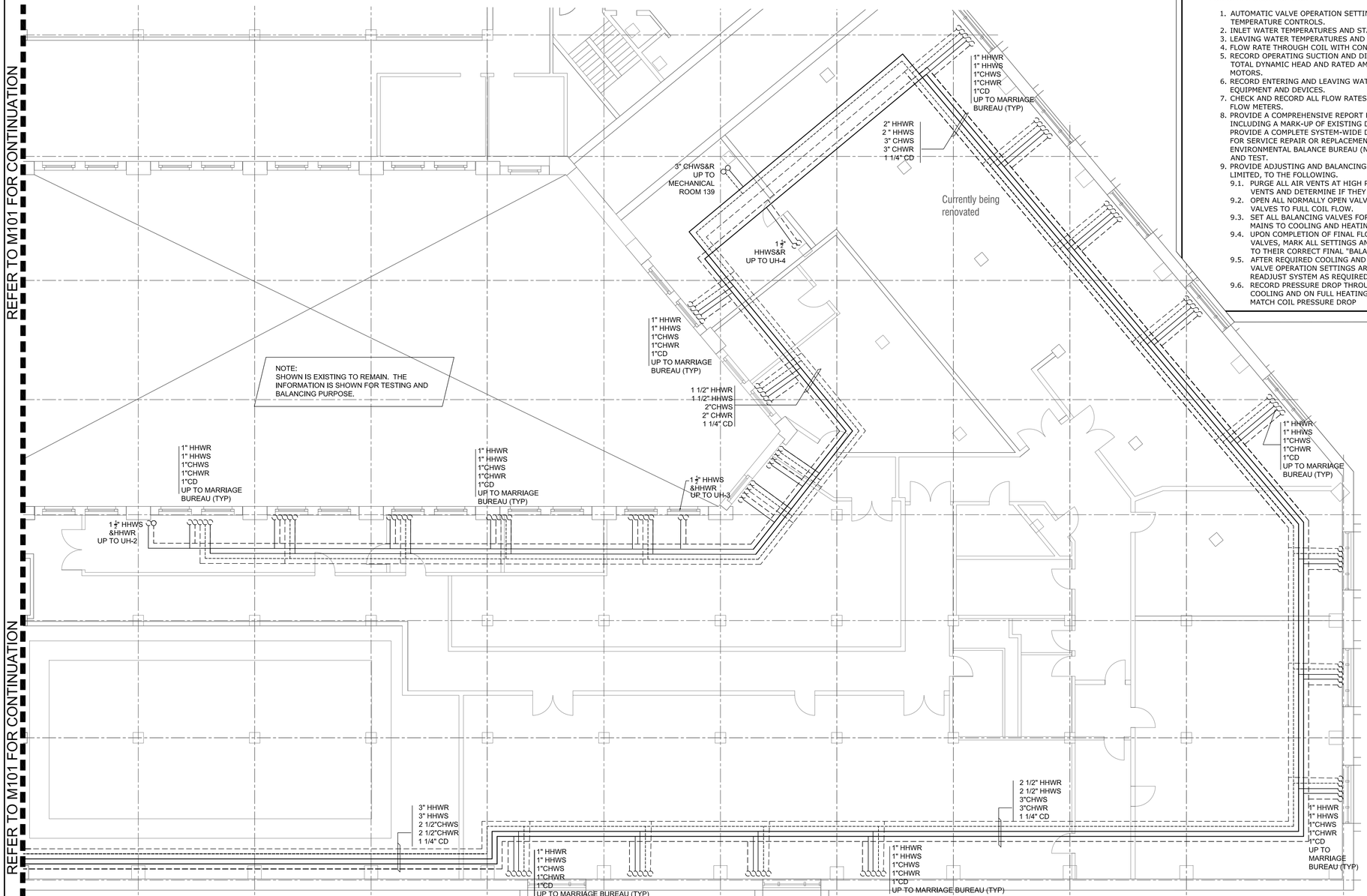
DRAWING NUMBER:
M-101.00

CADO FILE No:

11 OF 63



KEY PLAN



BASEMENT EXISTING PIPING PART PLAN 1

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DOB APPROVAL STAMP

SEAL & SIGNATURE

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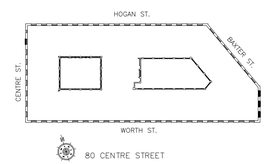

BLOCK: 166 LOT: 27

REVISIONS:

NUMBER	DESCRIPTION	DATE
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DIVISION OF PUBLIC BUILDINGS

CAPITAL PROJECT NUMBER:
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Lighting & HVAC Energy Efficiency Upgrades - Louis J. Lefkowitz Building
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DRAWING TITLE:
MECHANICAL - BASEMENT PART PLAN - 3

DATE:	23 JUNE, 2021
PROJECT NO:	E17-0001
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CHECKED BY:	RAVI SHENOY

DRAWING NUMBER:
M-102.00

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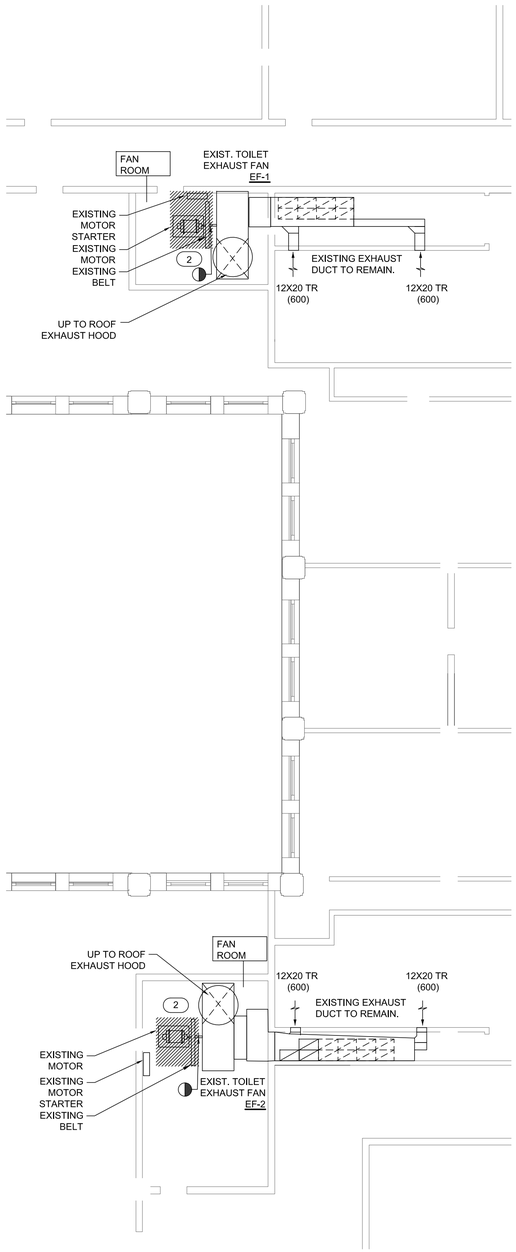
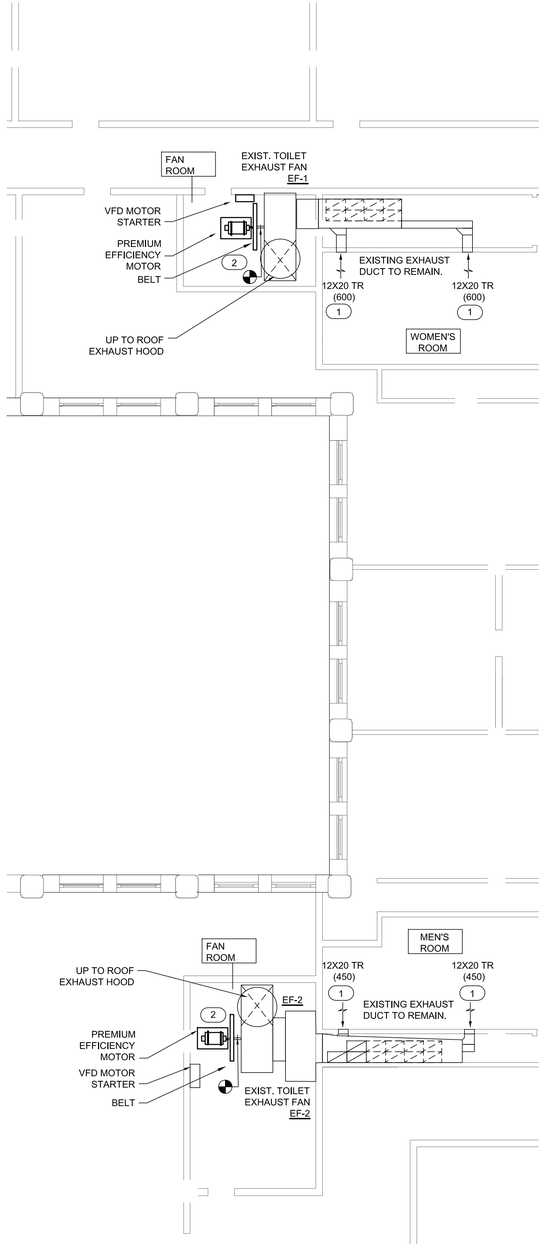


NINTH FLOOR DEMOLITION PLAN 1

SCALE: 1/8"=1'-0"

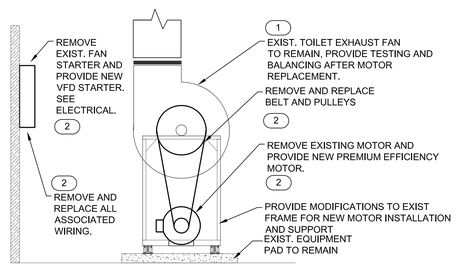
0 4' 28'
4' 12'



NINTH FLOOR PLAN 1

SCALE: 1/8"=1'-0"

0 4' 28'
4' 12'



FAN MOTOR REPLACEMENT DETAIL 3

SCALE: 1/8"=1'-0"

0 4' 28'
4' 12'

GENERAL NOTES

1. REFER TO M001 FOR SYMBOLS, NOTES AND ABBREVIATIONS.
2. CFM VALUES INDICATED ON PLANS ARE FOR BALANCING.

KEY NOTES

(1) CONTRACTOR SHALL PROVIDE THE BELOW SCOPE OF WORK AND SUBMIT REPORT IN NEBB FORM TO EOR. DEFICIENCIES AND REPAIRS SHALL BE INDICATED IN THE REPORT, WHICH SHALL BE PROVIDED TO DCAS FOR MAINTENANCE WORK.

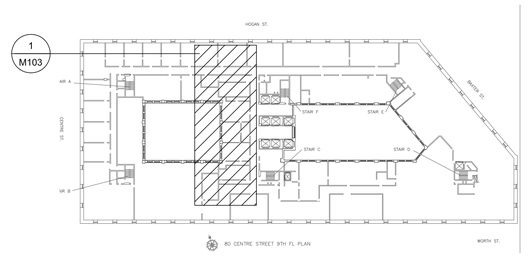
1. PROVIDE MEASUREMENT AS LISTED BELOW:
   1.1. MEASURE THE SUPPLY, RETURN AND/OR EXHAUST FAN AIR FLOW RATES AT THE UNITS.
   1.2. MEASURE THE AIR FLOW FROM ALL DUCTED AIR INLETS AND OUTLETS.
   1.3. MEASURE SUPPLY / EXHAUST FAN TOTAL PRESSURES, INTERNAL COMPONENT PRESSURE DROPS, RUNNING MOTOR AMPS, VOLTS AND ROTATIONAL SPEEDS (RPM).

2. PROVIDE A COMPREHENSIVE REPORT FOR THE LISTED TESTING AND MEASURING WORK, INCLUDING A MARK-UP OF EXISTING DRAWINGS TO INDICATE DEFECT LOCATIONS. PROVIDE A COMPLETE SYSTEM-WIDE DEFICIENCY LIST INCLUDING RECOMMENDATIONS FOR SERVICE REPAIR OR REPLACEMENT ACTIONS. REPORTING SHALL BE ON NATIONAL ENVIRONMENTAL BALANCE BUREAU (NEBB) FORMS FOR BOTH SYSTEMS COMMISSIONING AND TEST.

3. PROVIDE ADJUSTING AND BALANCING OF AIR SYSTEMS INCLUDE BUT NOT BE LIMITED TO THE FOLLOWING:
   3.1. ADJUST FAN RPM TO DESIGN REQUIREMENTS.
   3.2. ADJUST SYSTEM FOR DESIGN SUPPLY, TRANSFER AND RETURN AIRFLOW RATE.
   3.3. ADJUST SYSTEM FOR MINIMUM AND MAXIMUM (ECONOMIZER) DESIGN FLOW RATES OF OUTSIDE AIR.
   3.4. ADJUST ALL MAIN SUPPLY, RETURN, RELIEF, AND EXHAUST AIR DUCTS TO PROPER DESIGN FLOW RATE.
   3.5. ADJUST EACH DIFFUSER, GRILLE AND REGISTER.
   3.6. ALL DIFFUSERS, GRILLES AND REGISTERS SHALL BE ADJUSTED TO MINIMIZE DRAFTS IN ALL AREAS.

(2) CONTRACTOR SHALL PROVIDE THE BELOW SCOPE OF WORK

1. REMOVE EXISTING FAN MOTOR W/ EXISTING STARTER; REPLACE WITH NEW PREMIUM EFFICIENCY MOTOR AND VFD STARTER.
2. PROVIDE V-NEW BELTS , SHEAVES AND COUPLINGS FOR ALL NEW MOTORS.
3. REFER TO ELECTRICAL FOR STARTER SCOPE OF WORK .
4. EXISTINGFAN SUPPORTS TO BE MODIFIED TO SUIT NEW MOTOR DIMENSIONS.



KEY PLAN

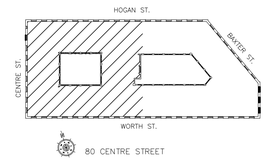
Lighting & HVAC Energy Efficiency Upgrades - Louis J. Lefkowitz Building

MEP Engineers:
SHENOY ENGINEERING, PC
39 US HWY 46 E, SUITE 802
PINEBROOK, NJ, 07058
(973)808-4090 phone
(973)808-4095 fax

Architect
CAPLES JEFFERSON
ARCH. 37-18 Northern Blvd.
Ste 319 Long Island City, NY
11101 Tel: 212.779.9772

Cost Estimate Consultant:
ELLANA INC.
32 BROADWAY, 8TH
FLOOR NEW YORK, NY
10004 TEL 212 971 0936

SITE PLAN



BLOCK: 166 LOT: 27

REVISIONS:

NUMBER	DESCRIPTION	DATE
4.	ISSUED FOR BID	6/23/2021
3.	COMPLIANCE SUBMISSION	3/26/2021
2.	100% CD SUBMISSION	1/26/2021
1.	DOB SUBMISSION	4/17/2020

Department of Design and Construction

DIVISION OF PUBLIC BUILDINGS

CAPITAL PROJECT NUMBER:
E17-0001

PROJECT
Lighting & HVAC Energy Efficiency Upgrades - Louis J. Lefkowitz Building
80 Centre Street, New York, NY, 10013

FOR THE: NYC Department of Citywide Administrative Services

DRAWING TITLE:
MECHANICAL - NINTH FLOOR PART PLAN

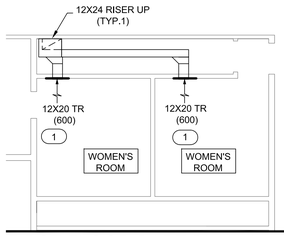
DOB APPROVAL STAMP

SEAL & SIGNATURE

DATE:	23 JUNE, 2021
PROJECT NO:	E17-0001
DRAWN BY:	RUNCI MA
CHECKED BY:	RAVI SHENOY

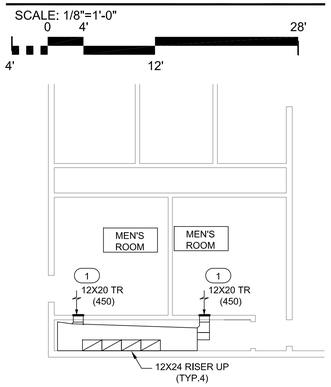
DRAWING NUMBER:
M-103.00

CADO FILE No:



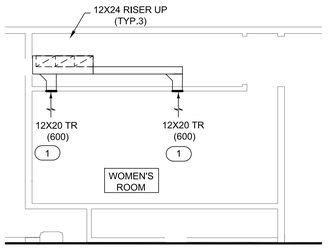
FIRST FLOOR PART PLAN-A 1

SCALE: 1/8"=1'-0"



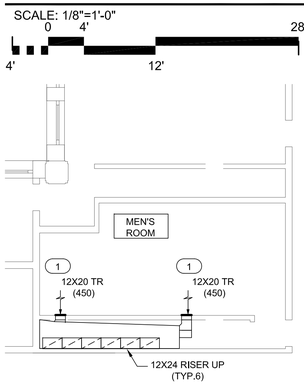
FIRST FLOOR PART PLAN-B 2

SCALE: 1/8"=1'-0"



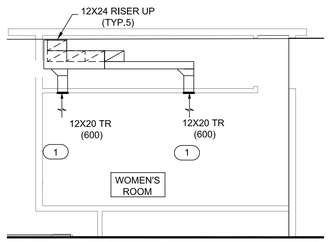
THIRD FLOOR PART PLAN-A 5

SCALE: 1/8"=1'-0"



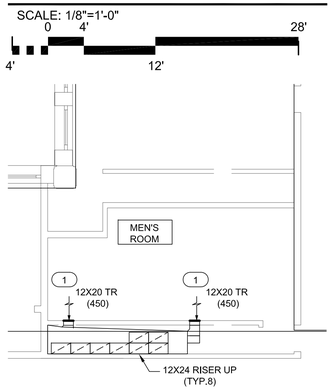
THIRD FLOOR PART PLAN-B 6

SCALE: 1/8"=1'-0"



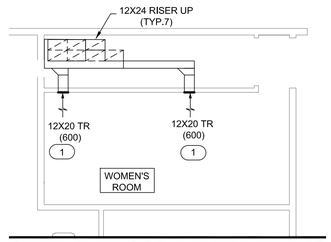
FIFTH FLOOR PART PLAN-A 9

SCALE: 1/8"=1'-0"



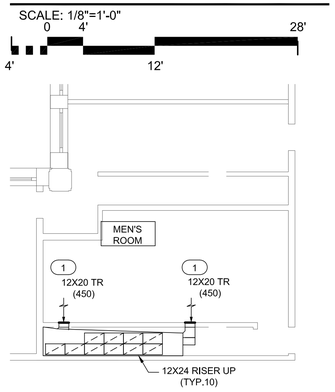
FIFTH FLOOR PART PLAN-B 10

SCALE: 1/8"=1'-0"



SEVENTH FLOOR PART PLAN-A 13

SCALE: 1/8"=1'-0"



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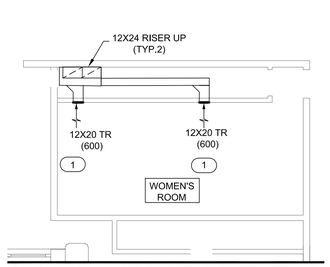
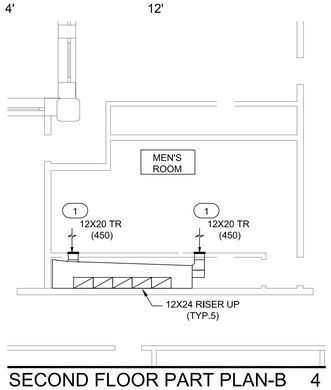


SECOND FLOOR PART PLAN-A 3

SCALE: 1/8"=1'-0"



SECOND FLOOR PART PLAN-B 4

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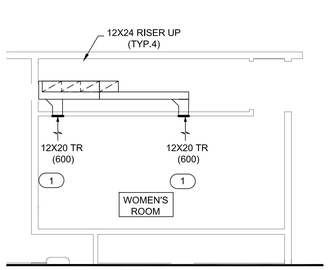
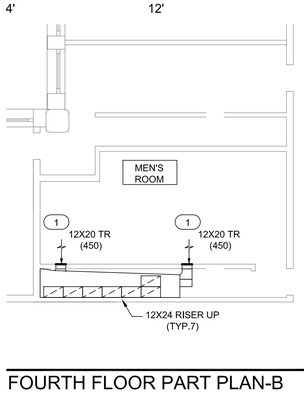


FOURTH FLOOR PART PLAN-A 7

SCALE: 1/8"=1'-0"



FOURTH FLOOR PART PLAN-B 8

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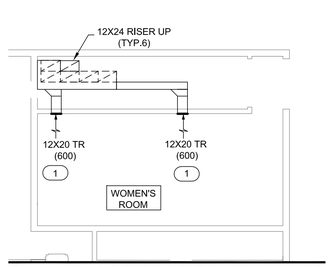
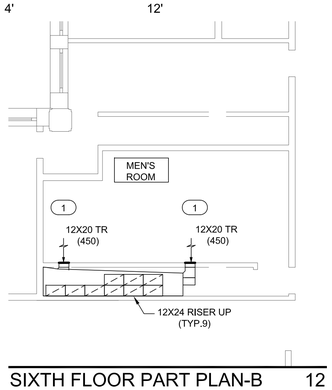


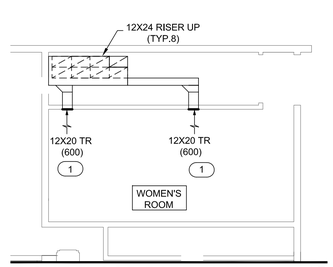
SIXTH FLOOR PART PLAN-A 11

SCALE: 1/8"=1'-0"



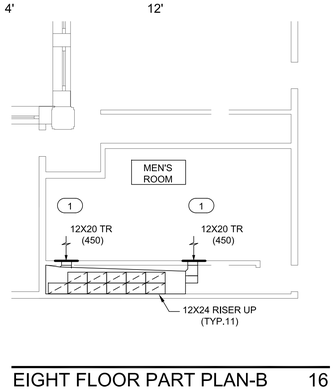
SIXTH FLOOR PART PLAN-B 12

SCALE: 1/8"=1'-0"



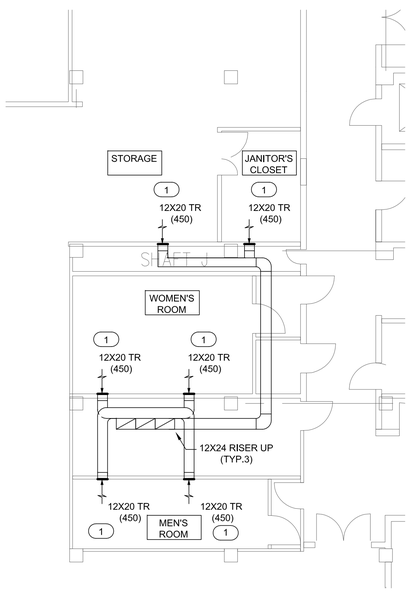
EIGHT FLOOR PART PLAN-A 15

SCALE: 1/8"=1'-0"



EIGHT FLOOR PART PLAN-B 16

SCALE: 1/8"=1'-0"



BASEMENT PART PLAN-A 17

SCALE: 1/8"=1'-0"

GENERAL NOTES

1. REFER TO M001 FOR SYMBOLS, NOTES AND ABBREVIATIONS.
2. CFM VALUES INDICATED ON PLANS ARE FOR BALANCING.

KEY NOTES

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   - 1.3. MEASURE SUPPLY / EXHAUST FAN TOTAL PRESSURES, INTERNAL COMPONENT PRESSURE DROPS, RUNNING MOTOR AMPS, VOLTS AND ROTATIONAL SPEEDS (RPM).

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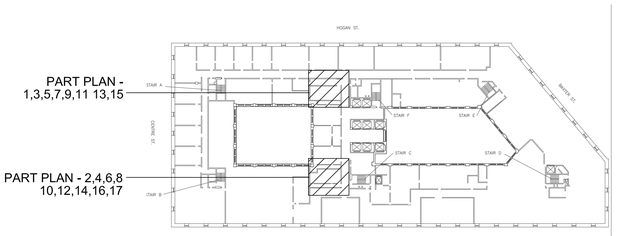
   - 3.4. ADJUST ALL MAIN SUPPLY, RETURN, RELIEF, AND EXHAUST AIR DUCTS TO PROPER DESIGN FLOW RATE.
   - 3.5. ADJUST EACH DIFFUSER, GRILLE AND REGISTER.
   - 3.6. ALL DIFFUSERS, GRILLES AND REGISTERS SHALL BE ADJUSTED TO MINIMIZE DRAFTS IN ALL AREAS.



KEY PLAN

DOB APPROVAL STAMP

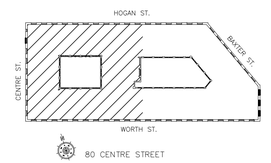
Lighting & HVAC Energy Efficiency Upgrades - Louis J. Lefkowitz Building

MEP Engineers:
SHENOY ENGINEERING, PC
39 US HWY 46 E, SUITE 802
PINEBROOK, NJ, 07058
(973)808-4090 phone
(973)808-4095 fax

Architect
CAPLES JEFFERSON
ARCH. 37-18 Northern Blvd.
Ste 319 Long Island City, NY
11101 Tel: 212.779.9772

Cost Estimate Consultant:
ELLANA INC.
32 BROADWAY, 8TH
FLOOR NEW YORK, NY
10004 TEL 212 971 0936

SITE PLAN



BLOCK: 166 LOT: 27

REVISIONS:

NUMBER	DESCRIPTION	DATE
4.	ISSUED FOR BID	6/23/2021
3.	COMPLIANCE SUBMISSION	3/26/2021
2.	100% CD SUBMISSION	1/26/2021
1.	DOB SUBMISSION	4/17/2020

Department of Design and Construction

DIVISION OF PUBLIC BUILDINGS

CAPITAL PROJECT NUMBER:
E17-0001

PROJECT
Lighting & HVAC Energy Efficiency Upgrades - Louis J. Lefkowitz Building
80 Centre Street, New York, NY, 10013

FOR THE: NYC Department of Citywide Administrative Services

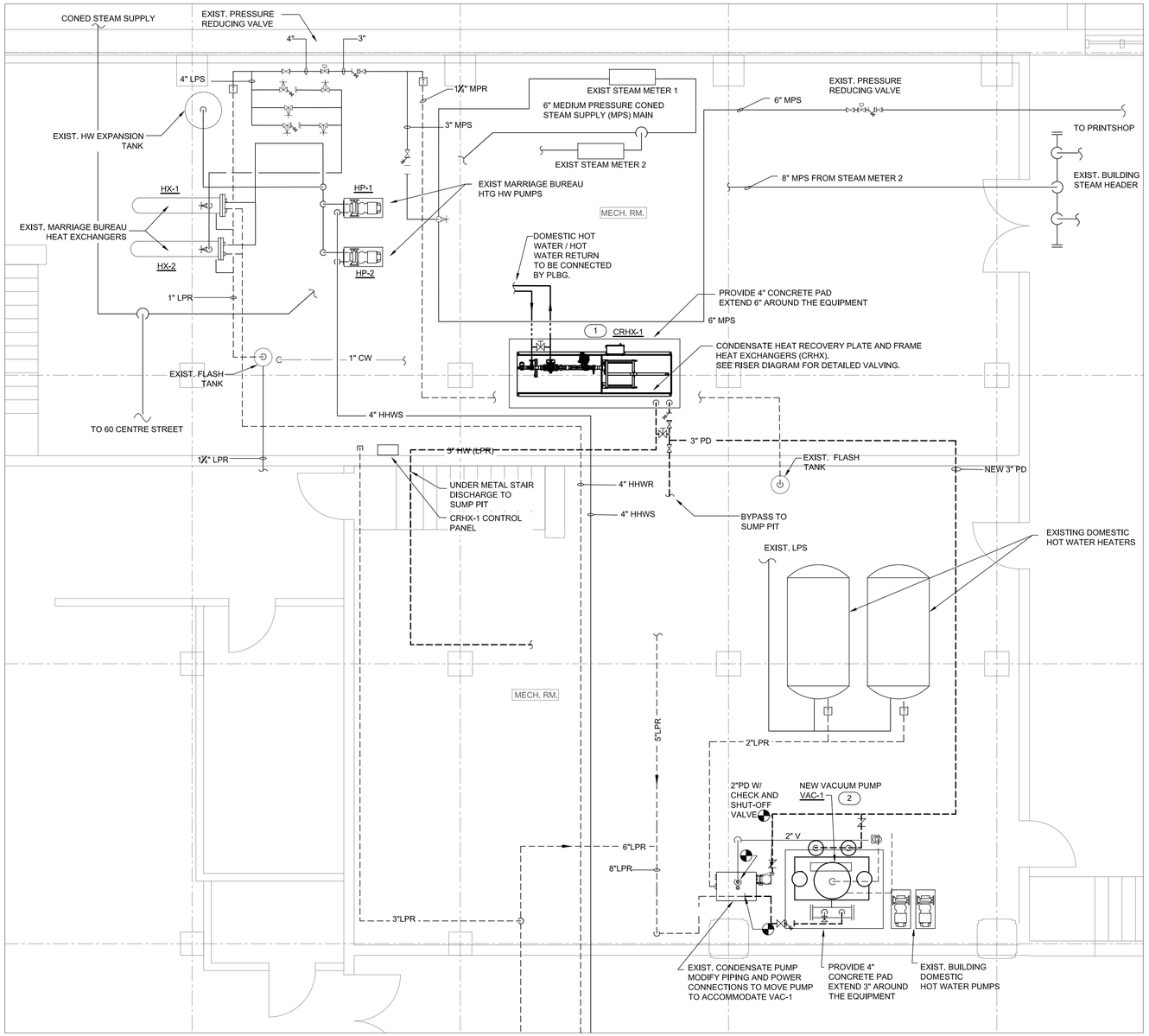
DRAWING TITLE:
MECHANICAL PART PLANS - TOILETS

SEAL & SIGNATURE

DATE:	23 JUNE, 2021
PROJECT NO:	E17-0001
DRAWN BY:	RUNCI MA
CHECKED BY:	RAVI SHENOY

DRAWING NUMBER:
M-104.00

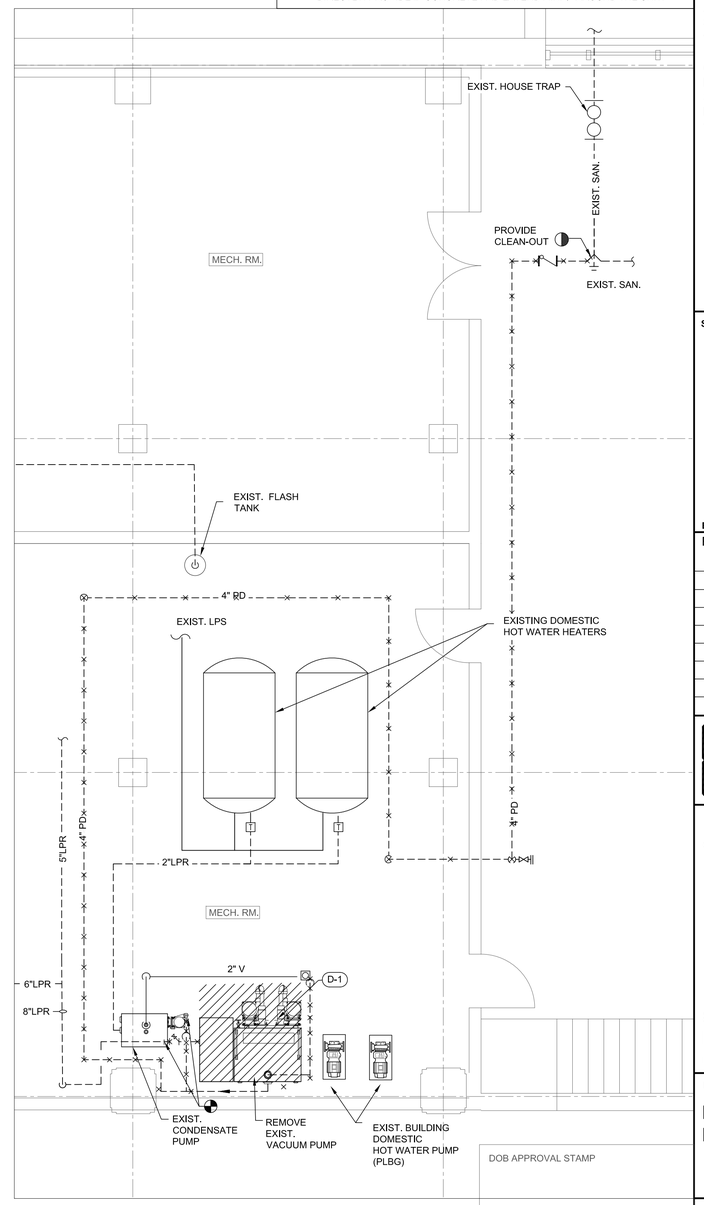
CADO FILE No:



BASEMENT PIPING PLAN 1

SCALE: 1/4"=1'-0"

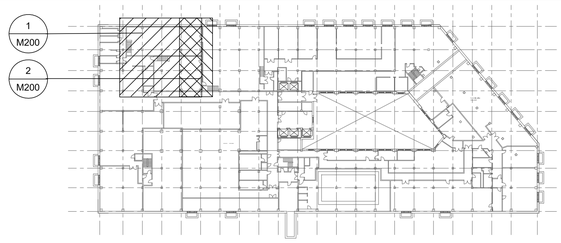
0 2' 14'
2' 6'



BASEMENT DEMOLITION PART PLAN 2

SCALE: 1/4"=1'-0"

0 2' 14'
2' 6'



KEY PLAN

GENERAL NOTES

1. REFER TO M001 FOR SYMBOLS, NOTES AND ABBREVIATIONS. REFER TO DETAILS SHEETS FOR INSTALLATION DETAILS

KEY NOTES

D-1 REMOVE EXISTING DUPLEX VACUUM PUMP, RECEIVER TANK AND ASSOCIATED PIPING, INSULATION, CONNECTIONS, SUPPORTS, ACCESSORIES, CONCRETE PAD, CONTROL PANEL AND WIRING. REMOVE EXISTING LPR PIPING SECTIONS, PUMP DISCHARGE, TRAPS, SUPPORTS AND ACCESSORIES. CAP PIPING AT MAINS.

1 PROVIDE NEW HEAT EXCHANGER WITH SUPPORT, VALVES, LPR/CD/CW/HW PIPING AND CONTROLS. PROVIDE 4" CONCRETE PAD EXTEND MIN. 6" AROUND THE UNIT.

2 PROVIDE NEW DUPLEX VACUUM PUMP SET, ALL PIPING AND VALVES, GAUGES, INSULATION, SUPPORTS, COLD WATER CONNECTION, REMOTE CONTROL PANEL, SWITCHES, ALTERNATOR, FACTORY WIRING AND CONTROLS AS SPECIFIED AND DETAILED. PROVIDE ALL SUPPORTS, OVERFLOW AND VENT PIPING. DISCHARGE OVERFLOW INTO SUMP PIT DIRECTLY. PROVIDE 4" CONCRETE PAD EXTEND MIN. 6" AROUND THE UNIT.

Lighting & HVAC Energy Efficiency Upgrades - Louis J. Lefkowitz Building

MEP Engineers:
SHENOY ENGINEERING, PC
39 US HWY 46 E, SUITE 802
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Architect
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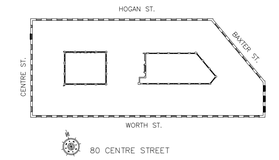
SITE PLAN



BLOCK: 166 LOT: 27

REVISIONS:

NUMBER	DESCRIPTION	DATE
4.	ISSUED FOR BID	6/23/2021
3.	COMPLIANCE SUBMISSION	3/26/2021
2.	100% CD SUBMISSION	1/26/2021
1.	DOB SUBMISSION	4/17/2020

Department of Design and Construction

DIVISION OF PUBLIC BUILDINGS

CAPITAL PROJECT NUMBER:
E17-0001

PROJECT
Lighting & HVAC Energy Efficiency Upgrades - Louis J. Lefkowitz Building
80 Centre Street, New York, NY, 10013

FOR THE: NYC Department of Citywide Administrative Services

DRAWING TITLE:
MECHANICAL - BASEMENT PART PLAN - 4

SEAL & SIGNATURE

DATE:	23 JUNE, 2021
PROJECT NO:	E17-0001
DRAWN BY:	RUNCI MA
CHECKED BY:	RAVI SHENOY

DRAWING NUMBER:
M-200.00

CADO FILE No:

15 OF 63

NOTE: ALL PIPING/EQUIPMENT SHOWN ARE EXISTING TO REMAIN. INFORAMTION SHOWN FOR BALANCING INFORMATION ONLY.

EXIST. PRINTSHOP HYDRONIC SYSTEM PIPING DIAGRAM 1

N.T.S.

GENERAL NOTES

1. REFER TO M001 FOR SYMBOLS, NOTES AND ABBREVIATIONS.
2. PER BUILDING PERSONNEL, EXISTING BALANCING VALVES AND SHUTOFF VALVES ARE OPERATIONAL AND NOT INDICATED IN THE DRAWING.

DOB APPROVAL STAMP

Lighting & HVAC Energy Efficiency Upgrades - Louis J. Lefkowitz Building

MEP Engineers:
SHENOY ENGINEERING, PC
39 US HWY 46 E, SUITE 802
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(973)808-4090 phone
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32 BROADWAY, 8TH
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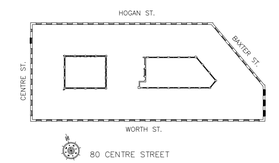
SITE PLAN



BLOCK: 166 LOT: 27

REVISIONS:

NUMBER	DESCRIPTION	DATE
4.	ISSUED FOR BID	6/23/2021
3.	COMPLIANCE SUBMISSION	3/26/2021
2.	100% CD SUBMISSION	1/26/2021
1.	DOB SUBMISSION	4/17/2020

Department of Design and Construction

DIVISION OF PUBLIC BUILDINGS

CAPITAL PROJECT NUMBER:
E17-0001

PROJECT
Lighting & HVAC Energy Efficiency Upgrades - Louis J. Lefkowitz Building
80 Centre Street, New York, NY, 10013

FOR THE: NYC Department of Citywide Administrative Services

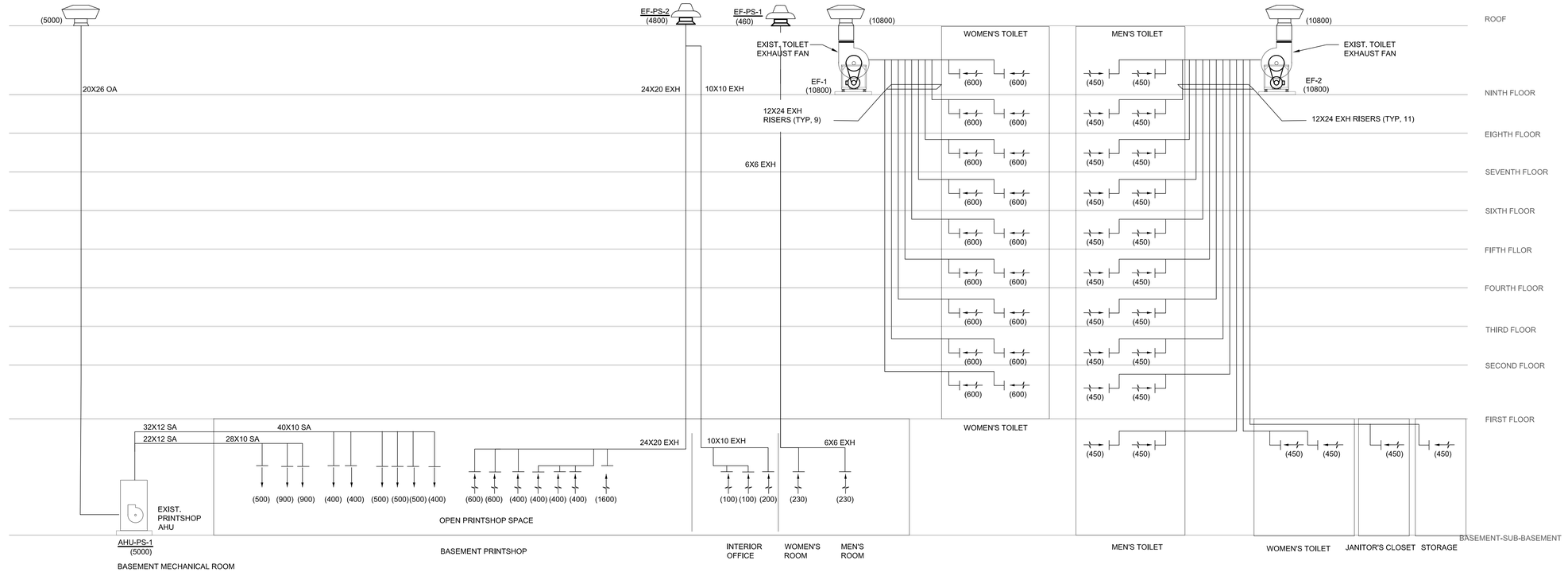
DRAWING TITLE:
MECHANICAL - RISER DIAGRAM - 1

SEAL & SIGNATURE

DATE: 23 JUNE, 2021
PROJECT NO: E17-0001
DRAWN BY: RUNCI MA
CHECKED BY: RAVI SHENOY
DRAWING NUMBER:
M-300.00
CADO FILE No:

GENERAL NOTES

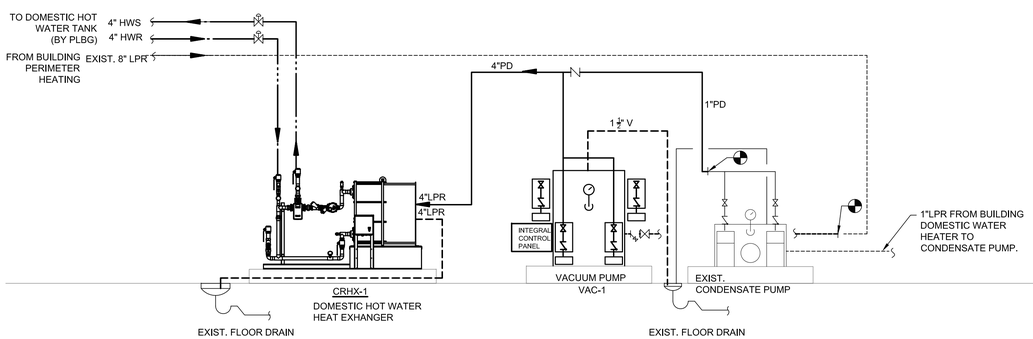
1. REFER TO M001 FOR SYMBOLS, NOTES AND ABBREVIATIONS.
2. PER BUILDING PERSONNEL, EXISTING BALANCING VALVES AND SHUTOFF VALVES ARE OPERATIONAL AND NOT INDICATED IN THE DRAWING.



NOTE: ALL DUCTWORK/EQUIPMENT SHOWN ARE EXISTING TO REMAIN. INFORAMTION SHOWN FOR BALANCING INFORMATION ONLY.

EXISTING MECHANICAL DUCT RISER DIAGRAM 1

N.T.S.



CONDENSATE HEAT RECOVERY SYSTEM PIPING DIAGRAM 1

N.T.S.

DOB APPROVAL STAMP

Lighting & HVAC Energy Efficiency Upgrades - Louis J. Lefkowitz Building

MEP Engineers:
SHENOY ENGINEERING, PC
39 US HWY 46 E, SUITE 802
PINEBROOK, NJ, 07058
(973)808-4090 phone
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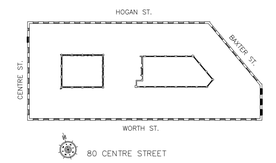
Architect
CAPLES JEFFERSON
ARCH. 37-18 Northern Blvd.
Ste 319 Long Island City, NY
11101 Tel: 212.779.9772

Cost Estimate Consultant:
ELLANA INC.
32 BROADWAY, 8TH
FLOOR NEW YORK, NY
10004 TEL 212 971 0936

SITE PLAN



BLOCK: 166 LOT: 27

REVISIONS:

NUMBER	DESCRIPTION	DATE
4.	ISSUED FOR BID	6/23/2021
3.	COMPLIANCE SUBMISSION	3/26/2021
2.	100% CD SUBMISSION	1/26/2021
1.	DOB SUBMISSION	4/17/2020

Department of Design and Construction

DIVISION OF PUBLIC BUILDINGS

CAPITAL PROJECT NUMBER:
E17-0001

PROJECT
Lighting & HVAC Energy Efficiency Upgrades - Louis J. Lefkowitz Building
80 Centre Street, New York, NY, 10013

FOR THE: NYC Department of Citywide Administrative Services

DRAWING TITLE:
MECHANICAL - RISER DIAGRAM - 2

SEAL & SIGNATURE

DATE:	23 JUNE, 2021
PROJECT NO:	E17-0001
DRAWN BY:	RUNCI MA
CHECKED BY:	RAVI SHENOY

DRAWING NUMBER:
M-301.00

CADO FILE No:

AHU1		INPUT/OUTPUT (NOTE 1)							SOFTWARE/FIRMWARE FEATURES			
		SENSED				SIGNAL RANGE			ALARMS AND ADVISORIES (WITH INSTRUCTIONS)			
REFERENCE NO.	POINT NAME	ANALOG INPUT	ANALOG OUTPUT	DIGITAL INPUT	DIGITAL OUTPUT	BOTTOM	TOP	UNITS	DIGITAL ALARM	CHANGE-OF-STATE ALARM	HIGH LIMIT ALARM	LOW LIMIT ALARM
1	OUTSIDE AIR TEMPERATURE	X				4	20	MA				
2	OUTSIDE AIR HUMIDITY	X				4	20	MA				
3	SUPPLY AIR HUMIDITY	X				4	20	MA				
4	PRINT SHOP SPACE HUMIDITY	X				4	20	MA				
5	PRE-HEAT COIL TEMPERATURE	X				10K OHMS @ 70F						
6	SUPPLY AIR TEMPERATURE	X				10K OHMS @ 70F						
7	FILTER STATUS			X		OFF	ON	ON/OFF	X		X	
8	SUPPLY FAN STATUS			X		OFF	ON	ON/OFF	X			
9	OUTSIDE AIR DAMPER STATUS			X		OFF	ON	ON/OFF				
10	LOW TEMPERATURE			X		OFF	ON	ON/OFF	X		X	
11	PRESSURE SWITCH LOW			X		OFF	ON	ON/OFF	X		X	
12	PRESSURE SWITCH HIGH			X		OFF	ON	ON/OFF	X		X	
13	EXHAUST FAN STATUS (EF-2)			X		OFF	ON	ON/OFF	X			
14	PRINT SHOP SPACE TEMPERATURE	X				10K OHMS @ 70F						
15	SUPPLY FAN START/STOP				X	OFF	ON	OFF/ON				
16	EF-2 START/STOP				X	OFF	ON	OFF/ON				
17	OUTSIDE AIR DAMPER OPEN/CLOSE				X	OFF	ON	OFF/ON				
18	PRINT ROOM DAMPER				X	OFF	ON	OFF/ON				
19	PRE-HEAT VALVE MODULATION		X			2	10	VDC				
20	COOLING VALVE MODULATION		X			2	10	VDC				
21	RE-HEAT VALVE MODULATION		X			2	10	VDC				
22	STEAM HUMIDIFIER VALVE MODULATION		X			0	10	VDC				

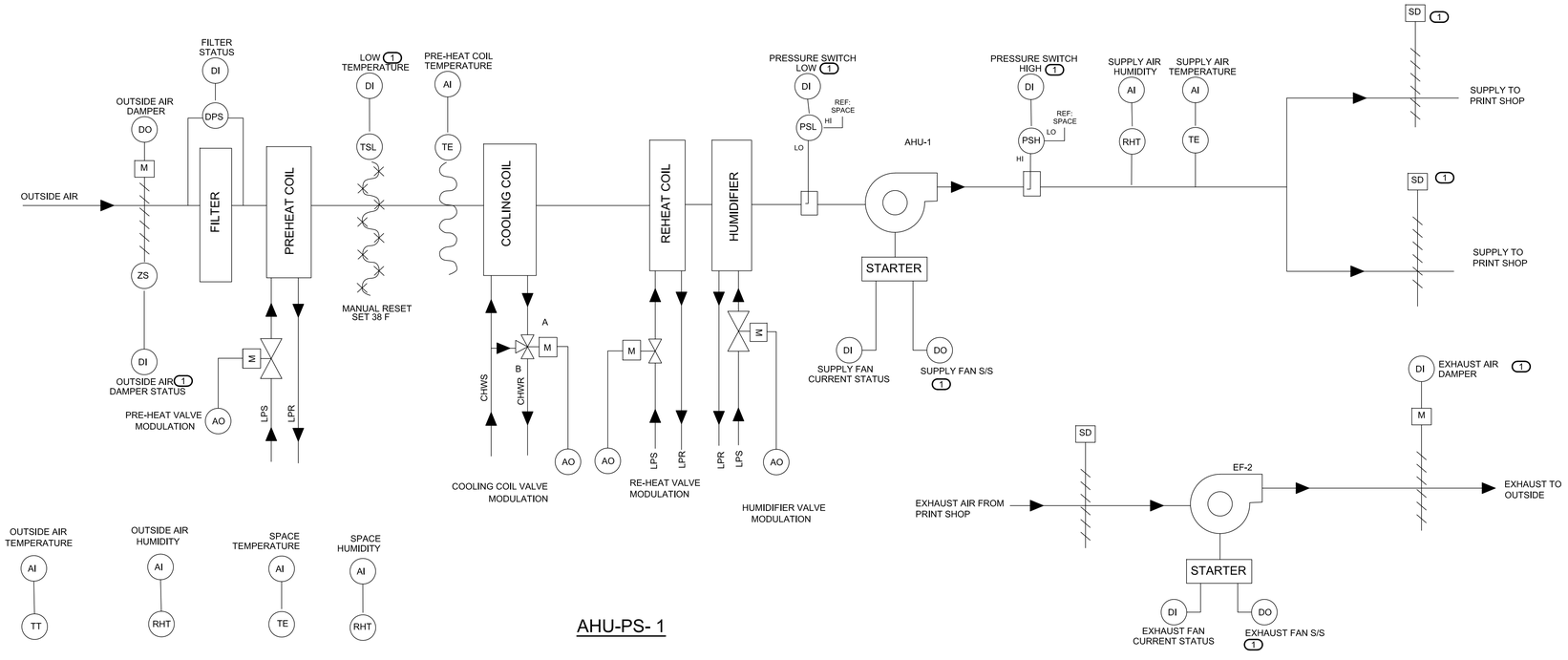
AHU-PS-1 CONTROL POINT LIST 1

ACCH-1		INPUT/OUTPUT (NOTE 1)							SOFTWARE/FIRMWARE FEATURES (NOTE 2,3)			
		SENSED				SIGNAL RANGE			ALARMS AND ADVISORIES (WITH INSTRUCTIONS)			
REFERENCE NO.	POINT NAME	ANALOG INPUT	ANALOG OUTPUT	DIGITAL INPUT	DIGITAL OUTPUT	BOTTOM	TOP	UNITS	DIGITAL ALARM	CHANGE-OF-STATE ALARM	HIGH LIMIT ALARM	LOW LIMIT ALARM
1	CHWP-1 STATUS			X		OFF	ON	ON/OFF	X			
2	CHWP-2 STATUS			X		OFF	ON	ON/OFF	X			
3	CHILLED WATER SUPPLY TEMPERATURE	X				10K OHMS @ 70F			X			
4	CHILLED WATER RETURN TEMPERATURE	X				10K OHMS @ 70F			X			
5	CHILLER COMMON ALARM			X		OFF	ON	ON/OFF	X		X	
6	CHILLER STATUS			X								
7	CHILLER STATUS			X								
8	CHWP-1 START/STOP				X	OFF	ON	ON/OFF				
9	CHWP-2 START/STOP				X	OFF	ON	ON/OFF				
10	CHILLER ACCH-1 START/STOP				X	OFF	ON	ON/OFF				
11	CHILLER SET POINT				X							

ACCH-PS-1 CONTROL POINT LIST 2

BC-1/BC-2/BC-3/BC-4		INPUT/OUTPUT (NOTE 1)							SOFTWARE/FIRMWARE FEATURES (NOTE 2,3)			
		SENSED				SIGNAL RANGE			ALARMS AND ADVISORIES (WITH INSTRUCTIONS)			
REFERENCE NO.	POINT NAME	ANALOG INPUT	ANALOG OUTPUT	DIGITAL INPUT	DIGITAL OUTPUT	BOTTOM	TOP	UNITS	DIGITAL ALARM	CHANGE-OF-STATE ALARM	HIGH LIMIT ALARM	LOW LIMIT ALARM
1	FAN STATUS			X		OFF	ON	ON/OFF	X			
2	FILTER STATUS			X		OFF	ON	ON/OFF	X		X	
3	CHILLED WATER LEAK ALARM			X		OFF	ON	ON/OFF	X		X	
4	SPACE TEMPERATURE	X				10K OHMS @ 70F			X			
5	FAN START/STOP				X	OFF	ON	ON/OFF	X			
6	HEAT CONTROL				X	OFF	ON		X			
7	COOLING COIL MODULATION		X			2	10	VDC	X			

FCU-1 TO FCU-4 CONTROL POINT LIST 3



AHU-PS- 1

EF-PS- 2

NOTES:
1. PROVIDE ALL CONTROLS, POINTS, SENSORS, CONTROL DEVICES INDICATED HERE AND AS REQUIRED FOR COMPLETE SEQUENCE OF OPERATION OF AHU.
2. CONTRACTOR SHALL SUBMIT ALL EXISTING AND PROPOSED SENSORS AND DEVICE LOCATIONS FOR APPROVAL PRIOR TO INSTALLATION.

PRINT SHOP CONTROL DIAGRAM 1

Lighting & HVAC Energy Efficiency Upgrades - Louis J. Lefkowitz Building

MEP Engineers:
SHENOY ENGINEERING, PC
39 US HWY 46 E, SUITE 802
PINEBROOK, NJ, 07058
(973)808-4090 phone
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Architect
CAPLES JEFFERSON
ARCH. 37-18 Northern Blvd.
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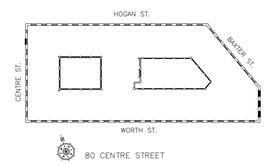
11101 Tel: 212.779.9772

Cost Estimate Consultant:
ELLANA INC.
32 BROADWAY, 8TH
FLOOR NEW YORK, NY
10004 TEL 212 971 0936

SITE PLAN



BLOCK: 166 LOT: 27

REVISIONS:

NUMBER	DESCRIPTION	DATE
4.	ISSUED FOR BID	6/23/2021
3.	COMPLIANCE SUBMISSION	3/26/2021
2.	100% CD SUBMISSION	1/26/2021
1.	DOB SUBMISSION	4/17/2020

Department of Design and Construction

DIVISION OF PUBLIC BUILDINGS

CAPITAL PROJECT NUMBER:
E17-0001

PROJECT
Lighting & HVAC Energy Efficiency Upgrades - Louis J. Lefkowitz Building
80 Centre Street, New York, NY, 10013

FOR THE: NYC Department of Citywide Administrative Services

DRAWING TITLE:
MECHANICAL - CONTROL DIAGRAM - 1

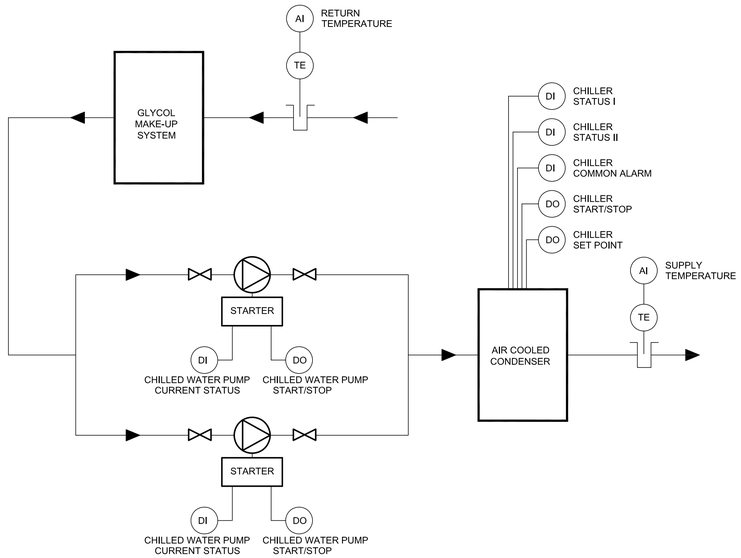
DOB APPROVAL STAMP

SEAL & SIGNATURE

DATE: 23 JUNE, 2021
PROJECT NO: E17-0001
DRAWN BY: RUNCI MA
CHECKED BY: RAVI SHENOY
DRAWING NUMBER:
M-400.00
CADO FILE No:
18 OF 63

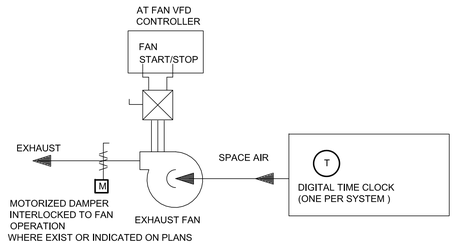
GENERAL NOTES

1. REFER TO M001 FOR NOTES, SYMBOLS AND ABBREVIATIONS LISTS.

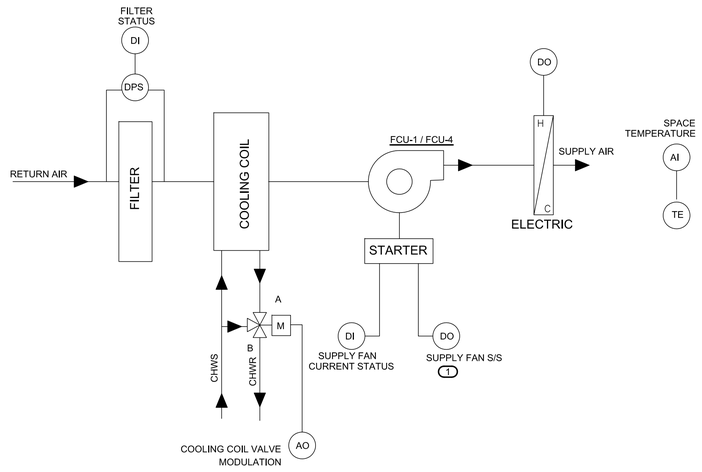


NOTES: CONTROLS, POINTS, SENSORS, CONTROL DEVICES INDICATED HERE ARE FOR REFERENCE ONLY. REFER TO TESTING SCOPE OF WORK ON PLANS.

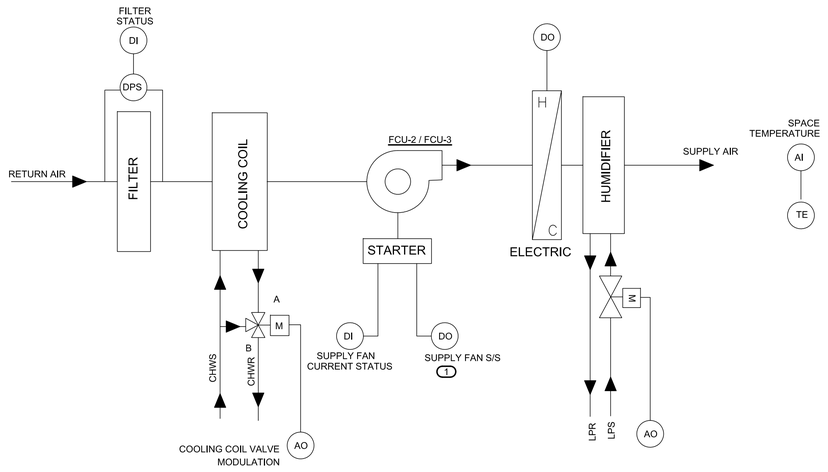
PRINT SHOP CHILLED WATER SYSTEM 1



TYPICAL EXHAUST SYSTEM CONTROL DIAGRAM



PRINT SHOP FAN COIL UNITS FCU-1 & FCU -4 2



PRINT SHOP FAN COIL UNITS FCU-2 & FCU-3 3

DOB APPROVAL STAMP

Lighting & HVAC Energy Efficiency Upgrades - Louis J. Lefkowitz Building

MEP Engineers:
SHENOY ENGINEERING, PC
39 US HWY 46 E, SUITE 802
PINEBROOK, NJ, 07058
(973)808-4090 phone
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Architect
CAPLES JEFFERSON
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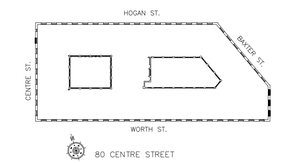
11101 Tel: 212.779.9772

Cost Estimate Consultant:
ELLANA INC.
32 BROADWAY, 8TH
FLOOR NEW YORK, NY
10004 TEL 212 971 0936

SITE PLAN



BLOCK: 166 LOT: 27

REVISIONS:

NUMBER	DESCRIPTION	DATE
4.	ISSUED FOR BID	6/23/2021
3.	COMPLIANCE SUBMISSION	3/26/2021
2.	100% CD SUBMISSION	1/26/2021
1.	DOB SUBMISSION	4/17/2020

Department of Design and Construction

DIVISION OF PUBLIC BUILDINGS

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80 Centre Street, New York, NY, 10013

FOR THE: NYC Department of Citywide Administrative Services

DRAWING TITLE:
MECHANICAL - CONTROL DIAGRAM - 2

SEAL & SIGNATURE

DATE:	23 JUNE, 2021
PROJECT NO:	E17-0001
DRAWN BY:	RUNCI MA
CHECKED BY:	RAVI SHENOY

DRAWING NUMBER:
M-401.00

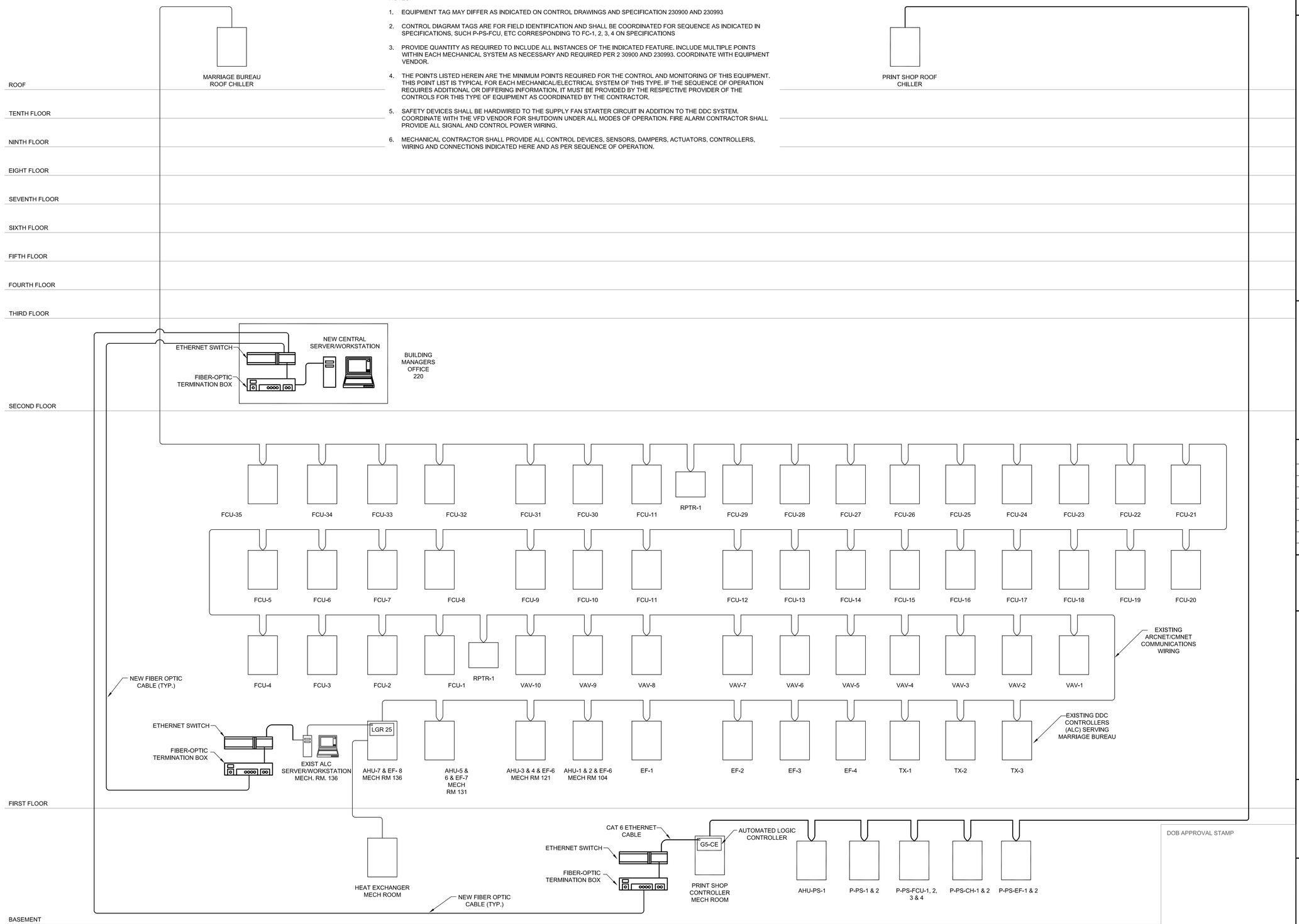
CADO FILE No:

GENERAL NOTES

1. REFER TO M001 FOR NOTES, SYMBOLS AND ABBREVIATIONS LISTS.
2. PROVIDE SOFTWARE UPGRADE FOR EXIST MARRIAGE BUREAU ALC SERVER-CONTROLLER

NOTES:

1. EQUIPMENT TAG MAY DIFFER AS INDICATED ON CONTROL DRAWINGS AND SPECIFICATION 230900 AND 230993
2. CONTROL DIAGRAM TAGS ARE FOR FIELD IDENTIFICATION AND SHALL BE COORDINATED FOR SEQUENCE AS INDICATED IN SPECIFICATIONS, SUCH P-PS-FCU, ETC CORRESPONDING TO FC-1, 2, 3, 4 ON SPECIFICATIONS
3. PROVIDE QUANTITY AS REQUIRED TO INCLUDE ALL INSTANCES OF THE INDICATED FEATURE. INCLUDE MULTIPLE POINTS WITHIN EACH MECHANICAL SYSTEM AS NECESSARY AND REQUIRED PER 2 30900 AND 230993. COORDINATE WITH EQUIPMENT VENDOR.
4. THE POINTS LISTED HEREIN ARE THE MINIMUM POINTS REQUIRED FOR THE CONTROL AND MONITORING OF THIS EQUIPMENT. THIS POINT LIST IS TYPICAL FOR EACH MECHANICAL/ELECTRICAL SYSTEM OF THIS TYPE. IF THE SEQUENCE OF OPERATION REQUIRES ADDITIONAL OR DIFFERING INFORMATION, IT MUST BE PROVIDED BY THE RESPECTIVE PROVIDER OF THE CONTROLS FOR THIS TYPE OF EQUIPMENT AS COORDINATED BY THE CONTRACTOR.
5. SAFETY DEVICES SHALL BE HARDWIRED TO THE SUPPLY FAN STARTER CIRCUIT IN ADDITION TO THE DDC SYSTEM. COORDINATE WITH THE VFD VENDOR FOR SHUTDOWN UNDER ALL MODES OF OPERATION. FIRE ALARM CONTRACTOR SHALL PROVIDE ALL SIGNAL AND CONTROL POWER WIRING.
6. MECHANICAL CONTRACTOR SHALL PROVIDE ALL CONTROL DEVICES, SENSORS, DAMPERS, ACTUATORS, CONTROLLERS, WIRING AND CONNECTIONS INDICATED HERE AND AS PER SEQUENCE OF OPERATION.



BMS RISER DIAGRAM 1

DOB APPROVAL STAMP

Lighting & HVAC Energy Efficiency Upgrades - Louis J. Lefkowitz Building

MEP Engineers:
SHENOY ENGINEERING, PC
39 US HWY 46 E, SUITE 802
PINEBROOK, NJ, 07058
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Architect
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Cost Estimate Consultant:
ELLANA INC.
32 BROADWAY, 8TH
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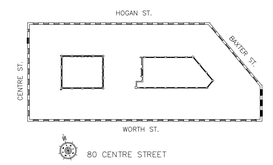
10004 TEL 212 971 0936

SITE PLAN



BLOCK: 166 LOT: 27

REVISIONS:

NUMBER	DESCRIPTION	DATE
4.	ISSUED FOR BID	6/23/2021
3.	COMPLIANCE SUBMISSION	3/26/2021
2.	100% CD SUBMISSION	1/26/2021
1.	DOB SUBMISSION	4/17/2020

Department of Design and Construction

DIVISION OF PUBLIC BUILDINGS

CAPITAL PROJECT NUMBER:
E17-0001

PROJECT
Lighting & HVAC Energy Efficiency Upgrades - Louis J. Lefkowitz Building
80 Centre Street, New York, NY, 10013

FOR THE: NYC Department of Citywide Administrative Services

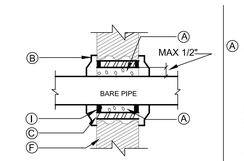
DRAWING TITLE:
MECHANICAL - CONTROL DIAGRAM - 3

SEAL & SIGNATURE

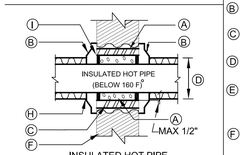
DATE:	23 JUNE, 2021
PROJECT NO:	E17-0001
DRAWN BY:	RUNCI MA
CHECKED BY:	RAVI SHENOY

DRAWING NUMBER:
M-402.00

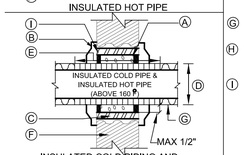
CADO FILE No: _____ 20 OF 63



BARE PIPE



INSULATED HOT PIPE



INSULATED COLD PIPING AND
INSULATED HOT PIPING (ABOVE 160 F)

Ⓐ ALL SPACES PACKED FULL DEPTH WITH MINERAL WOOL OR OTHER EQUALLY APPROVED FIRE RESISTIVE MATERIAL (ASBESTOS OR FIBERGLASS SHALL NOT BE USED)

FIRE RESISTANT FOAM SEAL ANT CHASE FOAM CTC P2-855 (NYC MEA#58-79 M#1&11 MAY BE USED. INSTALLATION AS PER MANUFACTURER.

Ⓑ ESCUTCHEON BOTH SIDES

Ⓒ SLEEVE

Ⓓ DIAMETER OF INSULATED PIPE

Ⓔ ANHYDROUS CALCIUM SILICATE INSULATION THROUGH SLEEVE

Ⓕ FIRE RATED PARTITION WALL OR FLOOR

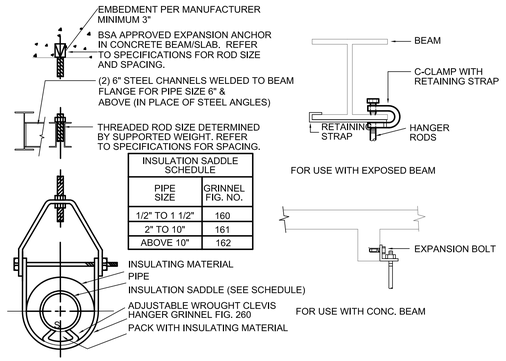
Ⓖ FIBERGLASS INSULATION

Ⓗ TERMINATE INSULATION AT ESCUTCHEON

Ⓘ 1/2" DEPTH FIRE STOP FINISH SEALANT (SEE HVAC SPEC)

DETAIL OF PIPING PIERCING FIRE RATED PARTITIONS, WALLS AND FLOORS

NOT TO SCALE



STEEL SADDLE FOR USE
WITH HOT PIPING INSULATION

PIPE HANGING & STEEL SADDLE DETAIL

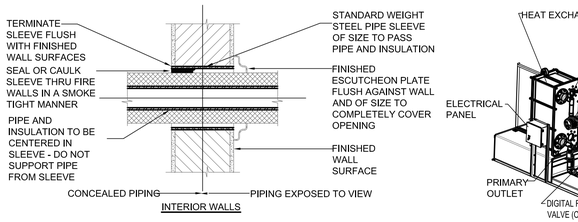
NOT TO SCALE

ALTERNATE ANCHORING

NOT TO SCALE

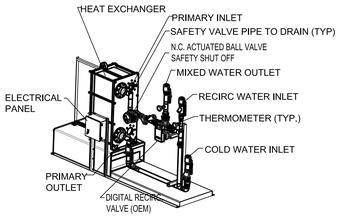
NOTE:

1. PROVIDE SUPPORTAT EACH FLOOR SLAB EXCEPT WHERE ANCHORS ARE INSTALLED.



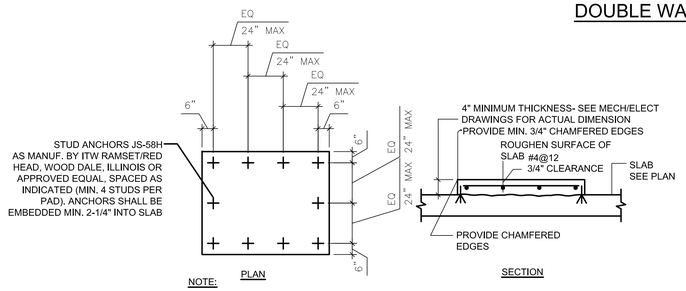
PIPE SLEEVES THRU WALL

NOT TO SCALE



PROVIDE INLET CHECK VALVES AND STRAINERS ON DOMESTIC SIDE.
DRV, SAFETY SHUT OFF AND ELECTRICAL PANEL ARE PREWIRED TO PROVIDE A SINGLE ELECTRICAL LANDING POINT AT THE PANEL.

BASIS OF DESIGN PLATE & FRAME DOUBLE WALL HEAT EXCHANGER

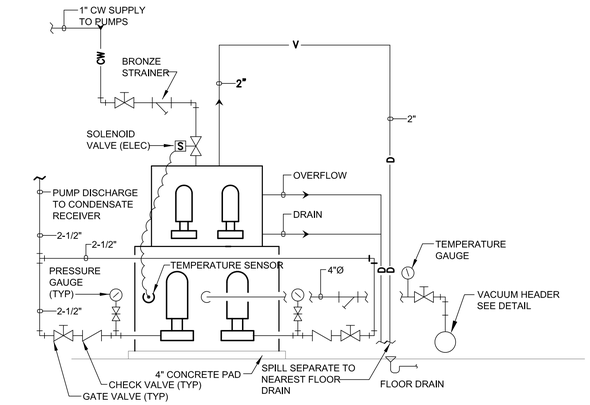


NOTE:

1. CONCRETE STRENGTH AND WEIGHT AT 21 DAYS: 3000 PSI AND 145 PCF.
2. EXTEND PAD A MINIMUM OF 6" BEYOND EQUIPMENT ON ALL SIDES.
3. PROVIDE CONCRETE PAD FOR NEW AND RELOCATED EQUIPMENT
4. FOR APPROXIMATE SIZE AND LOCATION OF PAD. FINAL SIZE AND LOCATION TO BE DETERMINED BY CONTRACTOR AND APPROVED BY EOR.

CONCRETE EQUIPMENT PAD

NOT TO SCALE



TYPICAL DUPLEX CONDENSATE PUMP PIPING DETAIL

NOT TO SCALE

NOTES:
1. PROVIDE VENT WITH AIR CHECK AND VACUUM GAUGE.
2. PROVIDE UNIONS AT EQUIPMENT CONNECTION POINTS.
3. SEE PLANS FOR PIPE SIZES.

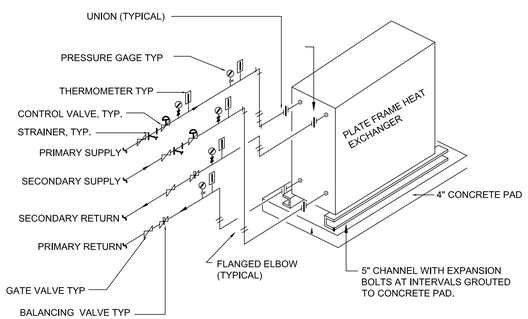
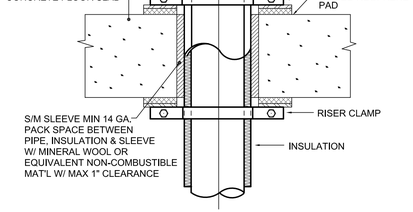


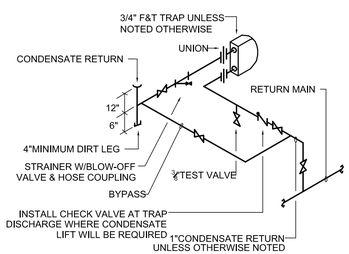
PLATE & FRAME HEAT EXCHANGER

N.T.S.



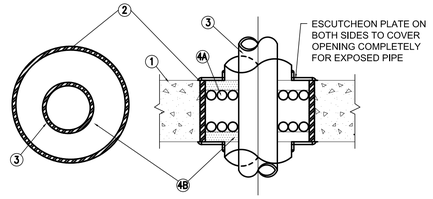
VERTICAL RISER SUPPORT

N.T.S.



LOW PRESSURE DRIP & TRAP RIG CONNECTION

N.T.S.



① FLOOR OR WALL ASSEMBLY= MIN. 4-1/2" THICK CONCRETE

② STEEL SLEEVE - NOM 14" DIAM. (OR SMALLER) SCH. 30 (OR HEAVIER) STEEL PIPE

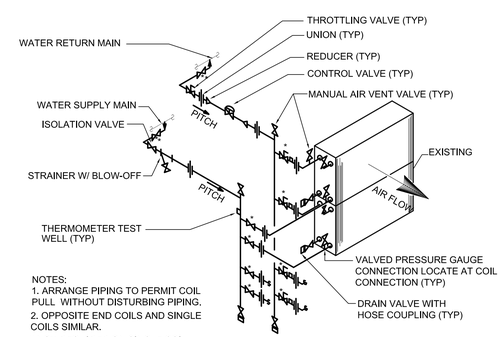
③ STEEL PIPE - 8" DIAM. (OR SMALLER) SCH. 40 (OR HEAVIER) STEEL. ANNULAR SPACE SHALL BE MIN. 1/2" TO MAX. 4 13/16"

④ A) PACKING MATERIAL - NOM 1" DIAM, POLYURETHANE BACKER ROD
B) NOM 1/2" THICKNESS NYC APPROVED FIRE STOPPING CAULKING
FYRE - SHIELD BY TREMCO OR EQUIVALENT MEA # 31-93-M

⑤ FIRE STOPPING SHALL BE SUBJECT TO SPECIAL INSPECTION PER CODE

FIRE STOPPING THROUGH RATED WALL

N.T.S.



NOTES:
1. ARRANGE PIPING TO PERMIT COIL PULL WITHOUT DISTURBING PIPING.
2. OPPOSITE END COILS AND SINGLE COILS SIMILAR.

* NOT REQUIRED ON SINGLE COIL.

* * THESE VALVES REQUIRED AT MAINS IF RUNS FROM MAINS TO COILS ARE MORE THAN 45'-0" OR IF COIL IS ON ROOF

CHILLED WATER OR HOT WATER HEATING COIL CONNECTION

N.T.S.

DOB APPROVAL STAMP

Lighting & HVAC Energy Efficiency Upgrades - Louis J. Lefkowitz Building

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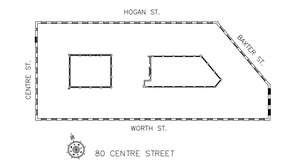
SITE PLAN



BLOCK: 166 LOT: 27

REVISIONS:

NUMBER	DESCRIPTION	DATE
4.	ISSUED FOR BID	6/23/2021
3.	COMPLIANCE SUBMISSION	3/26/2021
2.	100% CD SUBMISSION	1/26/2021
1.	DOB SUBMISSION	4/17/2020

Department of Design and Construction

DIVISION OF PUBLIC BUILDINGS

CAPITAL PROJECT NUMBER:
E17-0001

PROJECT
Lighting & HVAC Energy Efficiency Upgrades - Louis J. Lefkowitz Building
80 Centre Street, New York, NY, 10013

FOR THE: NYC Department of Citywide Administrative Services

DRAWING TITLE:
MECHANICAL - DETAILS SHEET - 1

SEAL & SIGNATURE

DATE:	23 JUNE, 2021
PROJECT NO:	E17-0001
DRAWN BY:	RUNCI MA
CHECKED BY:	RAVI SHENOY

DRAWING NUMBER:
M-500.00

CADO FILE No:

ABBREVIATIONS & SYMBOL LIST

SYMBOL	DESCRIPTION
S / W / ST	SANITARY/WASTE/SOIL/ STORM PIPING
S / W / ST U/S	UNDERGROUND SANITARY/WASTE/SOIL/ STORM PIPING
V	SANITARY VENT PIPING
	HOT WATER RETURN PIPING
	COLD WATER PIPING
	HOT WATER PIPING
	PIPING DOWN OR DROP
	PIPING UP OR RISE
	CAP OR PLUG
	CLEAN OUT DECK PLATE
	CLEAN OUT
	REMOVE EXISTING PIPING
P	PLUMBING STACK
L	LEADER STACK
	CHECK VALVE
	GATE VALVE
	BALANCING VALVE
	LUBRICATED PLUG VALVE
	HOSE VALVE/SILLCOCK
	PIPE SLEEVE
	IN-LINE PUMP
H&CW	HOT & COLD WATER
HW	HOT WATER PIPING
HWR	HOT WATER CIRCULATION PIPING
CO	CLEAN OUT
CW	COLD WATER PIPING
V	VENT PIPING
W	WASTE PIPING
FD	FLOOR DRAIN
FS	FLOOR SINK
C.I.	CAST IRON
GV	GATE VALVE
PD	PUMP DISCHARGE
WHA	WATER HAMMER ARRESTER
VTR	VENT THRU ROOF
CLG	CEILING
	CONNECT NEW TO EXISTING
	POINT OF DISCONNECTION
EXIST	EXISTING
AD	AREA WAY DRAIN
CO	CLEAN OUT
FCO	FLOOR CLEAN OUT
TYP.	TYPICAL
U/S	UNDER SLAB
CODP	CLEAN OUT DECK PLATE
F.A.I.	FRESH AIR INTAKE
MOCV	METER OUTLET CONTROL VALVE

PLUMBING DEMOLITION NOTES

1. THE CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS AND CONDITIONS OF THE SITE AND/OR BUILDING.
2. MAINTAIN CONTINUITY OF COLD WATER, HOT WATER, AND TOILET FACILITIES AT ALL TIMES.
3. COORDINATION OF ALL WORK UNDER THIS CONTRACT SHALL BE MAINTAINED TO ENSURE THE QUALITY AND TIMELY COMPLETION OF THE WORK/PROJECT.
4. PROVIDE FIRESTOPPING OR PATCHING PER SPECIFICATIONS FOR ALL SLAB, WALL OPENINGS DUE TO REMOVAL OF PLUMBING SYSTEMS.
5. THE CONTRACTOR SHALL PERFORM ALL CUTTING AND PATCHING PER S01010.
6. THE PLUMBING CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION AND PHASING BETWEEN ALL DEMOLITION AND NEW WORK.
7. CONTRACTOR SHALL EXAMINE ALL ADJOINING AREAS THAT MAY BE AFFECTED BY THE DEMOLITION AND REPORT TO DDC ANY CONDITION THAT PREVENTS THE PERFORMANCE OF THE WORK.
8. REMOVE EXISTING PIPING, VALVES AND EQUIPMENT AS PER DEMOLITION WORK INDICATED ON THE DRAWINGS
9. REMOVE ALL EXISTING UNUSED PLUMBING PIPING BACK TO MAIN AND CAP, LEAVING NO DEAD ENDS.

GENERAL WATER SERVICE SHUTDOWN NOTES:

1. TO MAINTAIN CONTINUITY OF SERVICE CONTRACTOR SHALL NOT DISCONNECT EXISTING WATER SERVICE WHILE BUILDING IS OCCUPIED.
2. PLUMBING CONTRACTOR SHALL BE RESPONSIBLE FOR MAKING SURE ALL FLUSH VALVES ARE FUNCTIONAL AFTER THE SHU DOWN.
3. PROVIDE BUILDING COLD WATER MAIN SHUT-DOWN FOR REMOVAL AND REPLACEMENT OF WATER PIPING & EQUIPMENT. CONTRACTOR SHALL PROVIDE RESETTING OF ALL FLUSH-VALVES AND FLUSHOMETERS THROUGH OUT THE BUILDING AT COMPLETION OF WORK AND RESTORATION OF COLD WATER SERVICE. PROVIDE FLUSHING OF ALL SEDIMENTS DURING FLUSH VALVE RESET. WORK SHALL BE PHASED IN ACCORDANCE WITH BUILDING MAINTENANCE PERSONELL SCHEDULE TO MAINTAIN CONTINUITY OF SERVICES.
4. CONTRACTOR SHALL PREFOR ALL ALL CUTTING AND PATCHING AND CORE DRILLING IN EXISTING CONSTRUCTION.

BUILDING DEPARTMENT NOTES

ALL PLUMBING WORK SHALL MEET THE REQUIREMENTS OF THE 2014 PLUMBING CODE.

1. THE PLUMBING SYSTEMS (SANITARY, WASTE, VENT, WATER DISTRIBUTION GAS ETC.) AND ALL ASSOCIATED EQUIPMENT SHALL BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH THE FULL REQUIREMENTS OF THE 2014 NEW YORK CITY BUILDING, PLUMBING AND GAS CODES AND CURRENT REVISIONS.
2. ALL PLUMBING WORK SHALL BE DONE BY OR UNDER THE DIRECT SUPERVISION OF A LICENSED NYC MASTER PLUMBER AS PER SECTION 28-408 OF THE 2014 NYC BUILDING CODE.
3. ALL PLUMBING WORK SHALL COMPLY WITH CHAPTER 4 OF THE 2014 NEW YORK CITY BUILDING CODE AND CHAPTERS 1 THROUGH 13 AND APPENDICES A THROUGH E OF THE NEW YORK CITY PLUMBING CODE.
4. THE SANITARY SYSTEM SHALL BE PROVIDED IN FULL ACCORDANCE WITH THE GENERAL PROVISIONS PC305.
5. THE MATERIALS USED IN THE PLUMBING SYSTEMS WILL BE PROVIDED IN FULL ACCORDANCE WITH SECTION PC303.
6. THE INSTALLATION OF PLUMBING FIXTURES, FAUCETS AND FIXTURE FITTINGS SHALL BE IN ACCORDANCE WITH PC401 THROUGH PC427.
7. VERTICAL AND HORIZONTAL PIPING WILL BE HUNG AND SUPPORTED AS DIRECTED IN SPECIFICATIONS AND WITH THE FULL COMPLIANCE WITH SECTION PC308.
8. CLEANOUTS SHALL BE INSTALLED AS PER SECTION PC708.
9. TRAPS FOR FIXTURES SHALL BE INSTALLED IN FULL COMPLIANCE WITH SECTION PC1002.
10. THE WATER SUPPLY SHALL BE INSTALLED AND MAINTAINED IN FULL COMPLIANCE WITH PC601 THROUGH PC613.
11. VALVES SHALL BE PROVIDED AS PER SECTION PC606.
12. THE SANITARY DRAINAGE SYSTEM WILL BE SIZED AND INSTALLED IN FULL COMPLIANCE WITH SECTIONS PC701 THROUGH PC715.
13. THE VENT PIPING FOR THE SANITARY DRAINAGE SYSTEM SHALL BE INSTALLED IN FULL COMPLIANCE WITH SECTION PC901
14. THROUGH PC919. VENT STACKS TO TERMINATE AT LEAST 24" ABOVE THE ROOF.
15. SANITARY TEES AND QUARTER BENDS MAY BE USED IN DRAINAGE LINES ONLY WHERE THE DIRECTION OF FLOW IS FROM THE HORIZONTAL TO THE VERTICAL.
16. SHORT SWEEPS WILL BE PERMITTED IN DRAINAGE PIPING 3 INCH DIAMETER OR LARGER FOR ANY OFFSETS EITHER HORIZONTAL OR VERTICAL.
17. SPECIAL AND STORAGE SYSTEMS PIPING SHALL BE DIRECTED IN SECTION PC1201 THROUGH PC1204.
18. HOT WATER SUPPLY SYSTEM AND ALL RELATED APPURTENANCES SHALL BE INSTALLED IN ACCORDANCE WITH PC607.
19. THE WATER SUPPLY AND DISTRIBUTION PIPING NOTES MUST BE IN COMPLIANCE WITH THE MINIMUM PRESSURES LISTED IN PC TABLE 604.3.
20. PROTECTION OF PIPING AS OUTLINED IN SECTION PC 305 SHALL BE PROVIDED AS REQUIRED.
21. ALL PIPING AND MATERIALS SHALL BE AS DIRECTED IN SECTIONS PC 303 & PC 702.
22. PIPING JOINTS AND CONNECTIONS SHALL BE AS APPROVED IN SECTIONS PC 605 & PC 705.
23. CONSTRUCTION, QUANTITIES, DEVICES, FIXTURES, FAUCETS, VALVES AND FACILITIES FOR THE DISABLED SHALL BE AS OUTLINED IN CHAPTER 4.
24. TRAPS SHALL BE AS PER SECTION PC 1002. CONSTRUCTION AND SPACING OF HANGERS AND SUPPORTS SHALL BE AS DIRECTED IN SECTION PC 308.
25. WATER SUPPLY SYSTEM, VALVES, TESTS SHALL BE AS DIRECTED IN CHAPTER 6.

SHOP DRAWING NOTE:

THE PLUMBING CONTRACTOR SHALL SUBMIT COORDINATED SHOP DRAWINGS OF ALL PLUMBING PIPING FOR REVIEW. THIS SHALL BE DONE BEFORE THE INSTALLATION OF ANY PIPING OR EQUIPMENT. THE SHOP DRAWING SHALL INCLUDE PIPE ROUTING, SIZES, SLOPE, INVERT ELEVATION, ELEVATIONS, SLEEVES LOCATIONS AND SIZES. THE DRAWINGS SHALL CONTAIN ALL THE INFORMATION NECESSARY FOR THE PROPER INSTALLATION OF THE JOB. THE SHOP DRAWINGS SHALL BE COORDINATED WITH OTHER TRADES AND OR EXISTING PIPING OR EQUIPMENT THAT MIGHT AFFECT THE INSTALLATION. THE DRAWING SHALL BE SUBMITTED AT A MIN 3/8" SCALE OR AT A SCALE THAT IS EASILY LEGIBLE. THE DESIGN DRAWINGS ARE ESSENTIALLY DIAGRAMMATIC AND ARE NOT INTENDED TO BE USED AS A SHOP DRAWING. THEREFORE A COPY OF THE DESIGN DRAWING IS NOT ACCEPTABLE AS A SHOP DRAWING. REFER TO SPECIFICATION SECTION ON SUBMITTALS FOR FOR ADDITIONAL INFORMATION.

SUMMARY OF WORK

THE WORK INCLUDES BUT IS NOT LIMITED TO THE FOLLOWING SYSTEM, EQUIPMENTS AND SERVICES.

1. REMOVE EXISTING (3) THREE HOUSE TANK PUMPS AND ASSOCIATED PIPING, CONTROLS AND SUPPORTS. REMOVE EXISTING TANK CONTROLS.
2. PROVIDE NEW PACKAGED TRIPLEX PUMP SET WITH ASSOCIATED PIPING AND CONTROLS.
3. PROVIDE NEW HOUSE TANK CONTROLS. PROVIDE CONTROL WIRING AND CONDUIT FROM HOUSE TANK TO PUMP ROOM.
4. PROVIDE DIGITAL TANK CONTROLS AND PANEL.
5. PROVIDE HEAT RECOVERY CONNECTION FOR CW, HW & HWR PIPING AND VALVING.

MATERIAL FOR PLUMBING SYSTEMS

PIPING SYSTEM	LOCATION	REQUIREMENTS
DOMESTIC WATER (HOT & COLD)	INTERIOR (ABOVE GROUND)	COPPER TUBING, TYPE L (BLUE COLOR BAR). WITH WROUGHT COPPER SOLDER JOINT FITTINGS SUITABLE FOR SOFT SOLDERING. BRASS SEAMLESS DRAWN PIPE, REGULAR WEIGHT WITH CAST BRONZE FITTING. CHROME PLATING FOR EXPOSED PIPING OR TRAPS IN KITCHEN AREA. COPPER TUBING FOR SHORT BRANCH CONNECTION TO PLUMBING FIXTURE.

NYC ENERGY CODE COMPLIANCE

1. REFER TO EN-002 DRAWING FOR ENERGY CODE COMPLIANCE REQUIREMENTS.

PLUMBING GENERAL NOTES

1. COORDINATE AND SCHEDULE ALL WORK TO MEET OVERALL DESIGN OBJECTIVE
2. ALL PLUMBING EQUIPMENT SHALL BE INSTALLED AND ADJUSTED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS UNLESS OTHERWISE SHOWN.
3. ALL BRACKETS, PLATES, CHANNELS, ETC. SHALL BE GALVANIZED UNLESS OTHERWISE NOTED
4. ALL GALVANIZED PARTS SHALL BE PAINTED PER SPECIFICATIONS BY PLUMBING CONTRACTOR
5. FOR ALL PIPES AND CONDUITS PASSING THROUGH WALLS OR FLOORS, PROVIDE PIPE SLEEVES.
6. ALL EXPOSED PIPES SHALL BE ARRANGED TO PERMIT ACCESS FOR MAINTENANCE
7. ALL DRAIN AND VENT PIPES SHALL HAVE A MINIMUM SLOPE OF 1/8" PER FOOT
8. COORDINATE SLOPING OF FLOORS TO FLOOR DRAINS
9. PROVIDE DRAIN VALVE AT ALL LOW POINTS
10. CHANGES IN DIRECTION IN DRAINAGE PIPING SHALL BE WITH APPROPRIATE USE OF 45° WYES, LONG SWEEPS, QUARTER, SIXTH, EIGHTH, OR SIXTEENTH BENDS.
11. PROVIDE CLEANOUT ON DRAIN LINES AS SHOWN ON DRAWINGS AND AS REQUIRED BY CODE.
12. COORDINATE WORK SHOWN ON THESE DRAWINGS WITH OTHER DRAWINGS.
13. SITE PLAN ORIENTATION AND FLOOR LAYOUTS MAY DIFFER. CONTRACTOR SHALL COORDINATE EACH LOCATION PER PLANS.
14. PLUMBING CONTRACTOR MUST BE SELF-CERTIFIED.
15. ALL PIPE SIZES, LOCATIONS AND ROUTING SHALL BE FIELD VERIFIED.

FIRE WATCH NOTE:

DURING THE REPLACEMENT OF EXISTING HOUSE TANK PUMPS THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVING FIRE WATCH.

HOUSE TANK PUMPS

MFG	MODEL No.	LOCATION	TYPE	SERVICE	SUCTION & DISCHARGE HEADER SIZE	GPM (EACH PUMP)	TDH	MOTOR DATA					EFF.	DIMENSIONS (LxWxH)	SHIPPING WEIGHT (LBS.)	REMARKS
								RPM	HP	VOLTS	PHASE	HZ				
FEDERAL PUMP CO. HP-1	RT-4A-16070-4-3B	MECHANICAL RM BASEMENT	TRIPLEX	ROOF TANK	2 1/2"	150	160	3450	3 @ 15 HP EA	208	3	60	68%	40"x29"x59"	1500	PROVIDE PACKAGED PUMP TRIPLEX SYSTEM.PROVIDE NEW TANK CONTROLS, CONTROL PANEL, TANK FLOAT CONTROLS, & CONTROL WIRING AND CONDUIT FROM PUMPS THE TANK

NOTE No. 1: PROVIDE LEAD/LAG, CONTROL PANEL, AND DEVICES & ACCESSORIES FOR A COMPLETE INSTALLATION.

COMMENT:

1. PROVIDE NEW PUMP CONTROL PANEL. PROVIDE CONTROL WIRING AND CONDUIT FROM PUMPS UP TO HOUSE TANK. PROVIDE NEW TANK CONTROLS.
2. NEMA-1 D1200 TRIPLEX CONTROL PANEL WITH MAGNETIC STARTERS, CIRCUIT BREAKERS, H-O-A SWITCHES, AUTOMATIC ALTERNATION, LOW-SUCTION CUT OUT, PILOT LIGHTS, AND LOW AND HIGH WATER ALARM SECTION WITH HORN, LIGHT, SILENCING BUTTON, AND DRY CONTACTS FOR REMOTE ALARM SIGNAL

DOB APPROVAL STAMP

SEAL & SIGNATURE

Lighting & HVAC Energy Efficiency Upgrades - Louis J. Lefkowitz Building

MEP Engineers:
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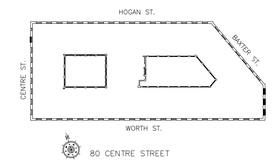
SITE PLAN



BLOCK: 166 LOT: 27

REVISIONS:

NUMBER	DESCRIPTION	DATE
4.	ISSUED FOR BID	6/23/2021
3.	COMPLIANCE SUBMISSION	3/26/2021
2.	100% CD SUBMISSION	1/26/2021
1.	DOB SUBMISSION	4/17/2020

Department of Design and Construction

DIVISION OF PUBLIC BUILDINGS

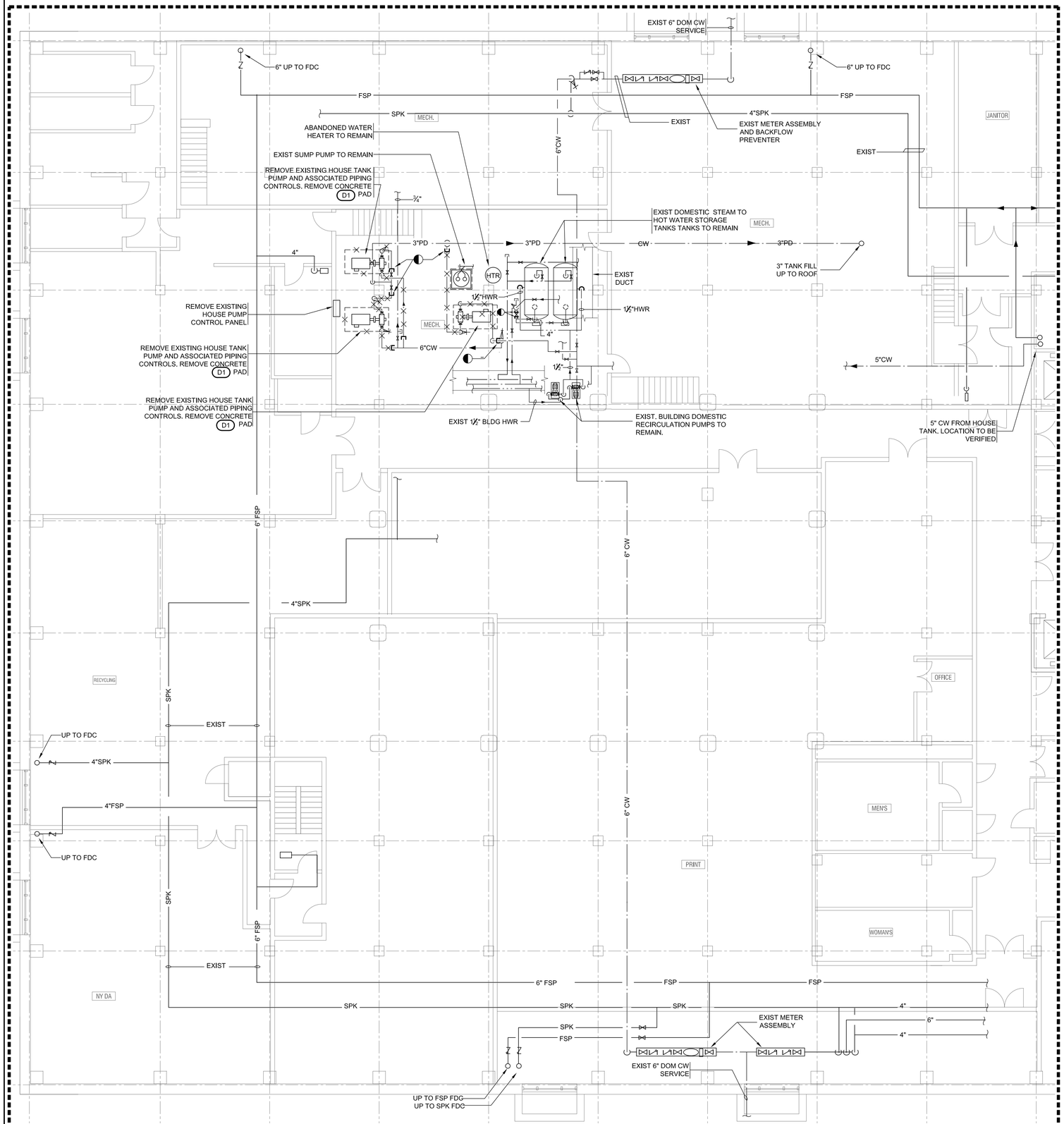
CAPITAL PROJECT NUMBER:
E17-0001

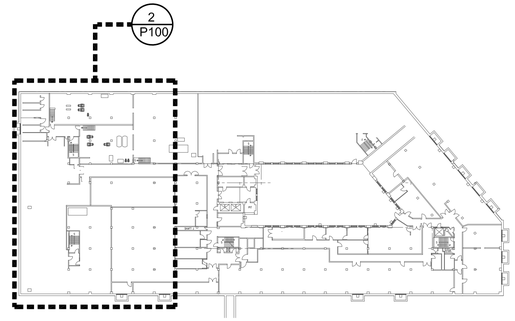
PROJECT
Lighting & HVAC Energy Efficiency Upgrades - Louis J. Lefkowitz Building
80 Centre Street, New York, NY, 10013

FOR THE: NYC Department of Citywide Administrative Services

DRAWING TITLE:
GENERAL NOTES, SYMBOLS AND ABBREVIATIONS

DATE:	23 JUNE, 2021
PROJECT NO:	E17-0001
DRAWN BY:	RUNCI MA
CHECKED BY:	RAVI SHENOY
DRAWING NUMBER:	P-001.00
CADO FILE No:	





BASEMENT KEY PLAN

NTS

GENERAL NOTES

1. REFER TO DRAWING P001.00 FOR SYMBOL LIST AND ABBREVIATIONS. REFER TO DRAWING P401.00 FOR PLUMBING DETAILS.
2. CONTRACTOR SHALL VERIFY ALL EXISTING PIPE SIZES.
3. THE COMPLETE SYSTEMS AND THE WORK SHALL BE SO INSTALLED AS TO GIVE PROPER AND CONTINUOUS SERVICE UNDER ALL CONDITIONS, AND SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF ALL PUBLIC AUTHORITIES HAVING JURISDICTION AND TO THE COMPLETE SATISFACTION OF THE AUTHORITY. ANY WORK SHOWN ON THE DRAWINGS AND NOT PARTICULARLY DESCRIBED IN THE SPECIFICATIONS, OR VICE VERSA OR ANY WORK WHICH MAY BE DEEMED NECESSARY TO COMPLETE THE CONTRACT SHALL BE PROVIDED BY THE CONTRACTOR AS PART OF ITS CONTRACT.
4. FOR PURPOSES OF CLEARNESS AND LEGIBILITY, PLUMBING DRAWINGS ARE ESSENTIALLY DIAGRAMMATIC. SIZE AND LOCATION OF EQUIPMENT ARE DRAWN TO SCALE WHEREVER POSSIBLE. THE DRAWINGS INDICATE SIZE, CONNECTION POINTS AND ROUTES OF PIPE. IT IS NOT INTENDED, HOWEVER, THAT ALL OFFSETS, RISES AND DROPS ARE SHOWN. PROVIDE PIPING AS REQUIRED TO FIT STRUCTURE, AVOID OBSTRUCTION, AND RETAIN CLEARANCES, HEADROOM OPENINGS AND PASSAGEWAYS. ALL PLUMBING AT CEILING SHALL BE ROUTED TIGHT TO EXIST SLAB AND THROUGH EXIST JOISTS AS REQUIRED.
5. PROVIDE ALL REQUIRED CUTTING, PATCHING, CORE DRILLING, RESTORATION, AND PAINTING TO ACCOMMODATE REMOVAL AND INSTALLATION OF NEW WORK. FINAL FINISH TO MATCH EXISTING FINISH IN ALL ASPECTS.
6. CONTRACTOR SHALL PROVIDE FIREWATCH DURING PUMP REPLACEMENT.

KEY NOTES

D1 REMOVE EXIST PUMP INCLUDING CONTROLS, WIRING, CONTROL PANEL, CONCRETE PAD, SUPPORTS, AND HANGERS. REMOVE ASSOCIATED PIPING AS SHOWN ON PLAN OR AS REQUIRED FOR RECONNECTION OF NEW PUMPS. AND ASSOCIATED PIPING UP TO MAIN AND CAP. REMOVE COMPLETELY ALL APPURTENANCES . REMOVE EXISTING TANK CONTROLS AFTER INSTALLATION OF NEW CONTROLS.

BASEMENT PART PLAN - PUMP ROOM- REMOVALS 2

SCALE: 1/8"=1'-0"

0 4' 28'

4' 12'

DOB APPROVAL STAMP

SEAL & SIGNATURE

Lighting & HVAC Energy Efficiency Upgrades - Louis J. Lefkowitz Building

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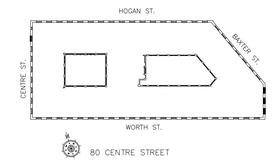
SITE PLAN



BLOCK: 166 LOT: 27

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Department of Design and Construction

DIVISION OF PUBLIC BUILDINGS

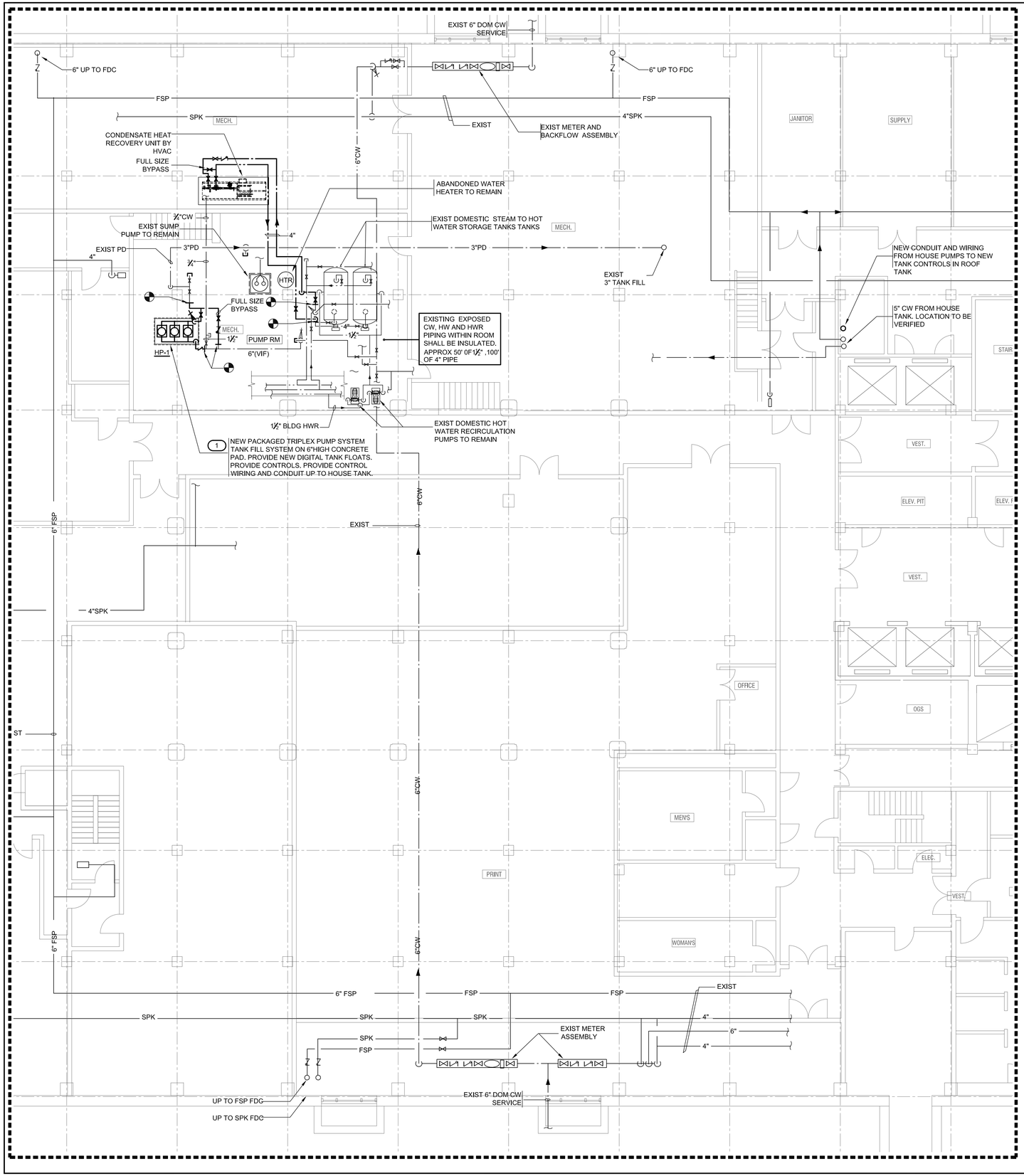
CAPITAL PROJECT NUMBER:
E17-0001

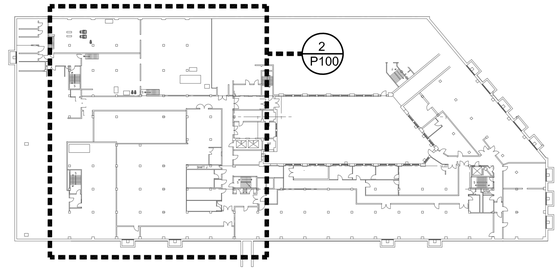
PROJECT
Lighting & HVAC Energy Efficiency Upgrades - Louis J. Lefkowitz Building
80 Centre Street, New York, NY, 10013

FOR THE: NYC Department of Citywide Administrative Services

DRAWING TITLE:
PLUMBING - DEMOLITION PART PLAN - BASEMENT

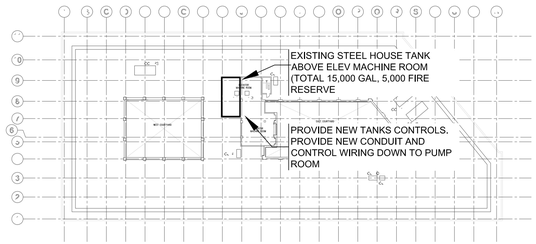
DATE:	23 JUNE, 2021
PROJECT NO:	E17-0001
DRAWN BY:	RUNCI MA
CHECKED BY:	RAVI SHENOY
DRAWING NUMBER:	P-061.00
CADO FILE No:	





BASEMENT KEY PLAN

NTS



ROOF PLAN - HOUSE TANK LOCATION

NTS

GENERAL NOTES

1. REFER TO DRAWING P001.00 FOR SYMBOL LIST AND ABBREVIATIONS, REFER TO DRAWING P401.00 FOR PLUMBING DETAILS.
2. THE COMPLETE SYSTEMS AND THE WORK SHALL BE SO INSTALLED AS TO GIVE PROPER AND CONTINUOUS SERVICE UNDER ALL CONDITIONS, AND SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF ALL PUBLIC AUTHORITIES HAVING JURISDICTION AND TO THE COMPLETE SATISFACTION OF THE AUTHORITY. ANY WORK SHOWN ON THE DRAWINGS AND NOT PARTICULARLY DESCRIBED IN THE SPECIFICATIONS, OR VICE VERSA OR ANY WORK WHICH MAY BE DEEMED NECESSARY TO COMPLETE THE CONTRACT SHALL BE PROVIDED BY THE CONTRACTOR AS PART OF ITS CONTRACT.
3. FOR PURPOSES OF CLEARNESS AND LEGIBILITY, PLUMBING DRAWINGS ARE ESSENTIALLY DIAGRAMMATIC. SIZE AND LOCATION OF EQUIPMENT ARE DRAWN TO SCALE WHEREVER POSSIBLE. THE DRAWINGS INDICATE SIZE, CONNECTION POINTS AND ROUTES OF PIPE. IT IS NOT INTENDED, HOWEVER, THAT ALL OFFSETS, RISES AND DROPS ARE SHOWN. PROVIDE PIPING AS REQUIRED TO FIT STRUCTURE, AVOID OBSTRUCTION, AND RETAIN CLEARANCES, HEADROOM OPENINGS AND PASSAGEWAYS. ALL PLUMBING AT CEILING SHALL BE ROUTED TIGHT TO EXIST SLAB AND THROUGH EXIST JOISTS AS REQUIRED.
4. PROVIDE ALL REQUIRED CUTTING, PATCHING, CORE DRILLING, RESTORATION, AND PAINTING TO ACCOMMODATE REMOVAL AND INSTALLATION OF NEW WORK. FINAL FINISH TO MATCH EXISTING FINISH IN ALL ASPECTS.
5. CONTRACTOR PHASE REMOVAL AND INSTALLATION OF NEW WORK TO MAINTAIN SERVICE TO HOUSE TANK AT ALL TIMES.

15. ALL PIPE SIZES, LOCATIONS AND ROUTING SHALL BE FIELD VERIFIED.
16. CONTRACTOR SHALL PROVIDE FIREWATCH DURING PUMP REPLACEMENT

KEY NOTES

(1) PROVIDE NEW PUMP SET. PROVIDE ALL REQUIRED APPURTENANCES, VALVES FLEXIBLE CONNECTIONS AND SUPPORTS. PROVIDE NEW DIGITAL TANK CONTROLS, CONDUIT AND WIRING UP TO ROOF TANK FOR A COMPLETE INSTALLATION.

BASEMENT PART PLAN - PUMP ROOM - CONSTRUCTION 1

SCALE: 1/8"=1'-0"

0 4' 28'

4' 12'

DOB APPROVAL STAMP

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11101 Tel: 212.779.9772

Cost Estimate Consultant:
ELLANA INC.
32 BROADWAY, 8TH
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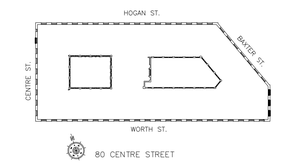
10004 TEL 212 971 0936

SITE PLAN



BLOCK: 166 LOT: 27

REVISIONS:

NUMBER	DESCRIPTION	DATE
4.	ISSUED FOR BID	6/23/2021
3.	COMPLIANCE SUBMISSION	3/26/2021
2.	100% CD SUBMISSION	1/26/2021
1.	DOB SUBMISSION	4/17/2020

Department of Design and Construction

DIVISION OF PUBLIC BUILDINGS

CAPITAL PROJECT NUMBER:
E17-0001

PROJECT
Lighting & HVAC Energy Efficiency Upgrades - Louis J. Lefkowitz Building
80 Centre Street, New York, NY, 10013

FOR THE: NYC Department of Citywide Administrative Services

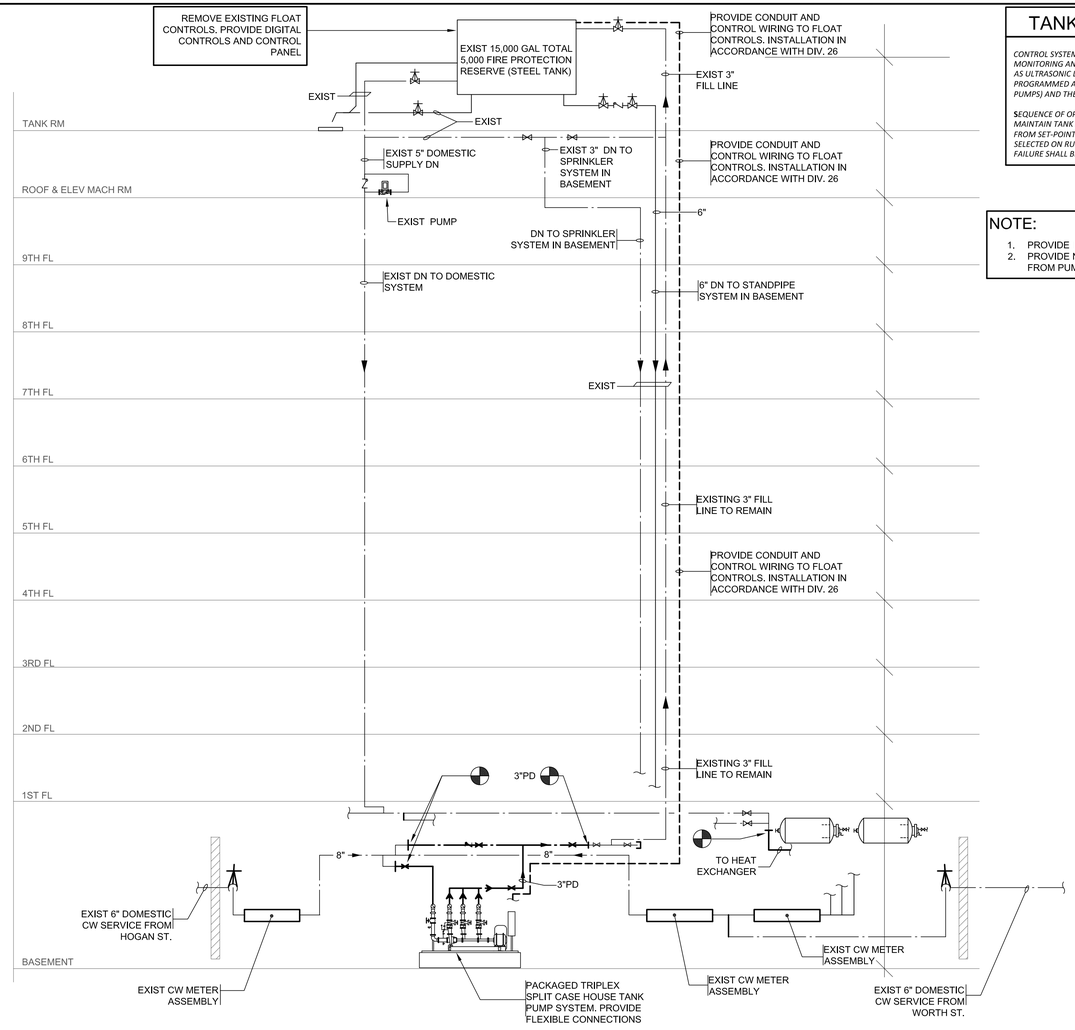
DRAWING TITLE:
PLUMBING -
BASEMENT PART PLAN

SEAL & SIGNATURE

DATE:	23 JUNE, 2021
PROJECT NO:	E17-0001
DRAWN BY:	A.ATHERLEY
CHECKED BY:	RAVI SHENOY

DRAWING NUMBER:
P-101.00

CADO FILE No: _____ 24 OF 63



WATER RISER DIAGRAM

NOT TO SCALE

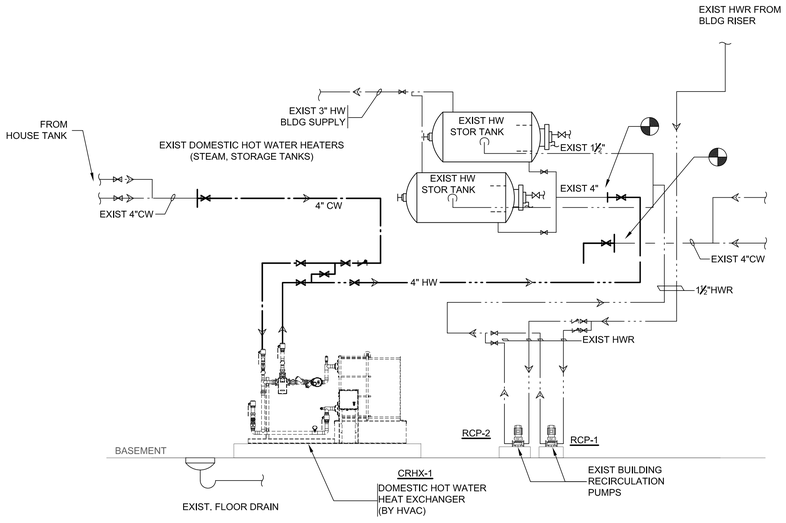
TANK CONTROLS SPECIFICATIONS

CONTROL SYSTEM SHALL BE TANK MANUFACTURER (ROSENWACH) RECOMMENDED - ABACUS TANK MONITORING AND CONTROL SYSTEM, OR EQUAL, COMPRISING OF CONTROLLER; ALL FIELD DEVICES SUCH AS ULTRASONIC LEVEL TRANSMITTER, TEMPERATURE TRANSMITTER, AND ALARM AND INDICATION STATION, PROGRAMMED AND WIRED PER MANUF. REQUIREMENTS. WIRING BETWEEN CONTROLLER (LOCATED NEAR PUMPS) AND THE HOUSE TANK SHALL BE PROVIDED PER CONTRACT DRAWING P001 PUMP SCHEDULE.

SEQUENCE OF OPERATION FOR THE NEW SYSTEM SHALL CONSISTS OF AUTOMATIC START/STOP CONTROL TO MAINTAIN TANK WATER LEVEL. CONTROLLER WILL INITIATE THE LEAD PUMP UPON DROP IN WATER LEVEL FROM SET-POINT AND WILL SHUT-OFF THE PUMP UPON REACHING FILL LEVEL. LEAD/LAG PUMPS WILL BE SELECTED ON RUN-TIME OR LEAD PUMP FAILURE. ALARMS FOR LOW, HIGH WATER LEVEL AND PUMP FAILURE SHALL BE INCLUDED AT MAIN CONTROLLER.

NOTE:

1. PROVIDE FLOAT CONTROLS.
2. PROVIDE NEW CONDUIT AND CONTROL WIRING FROM PUMP ROOM TO ROOF TANK.



HEAT EXCHANGER PIPING SCHEMATIC

NOT TO SCALE

DOB APPROVAL STAMP

Lighting & HVAC Energy Efficiency Upgrades - Louis J. Lefkowitz Building

MEP Engineers:
SHENOY ENGINEERING, PC
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(973)808-4090 phone
(973)808-4095 fax

Architect
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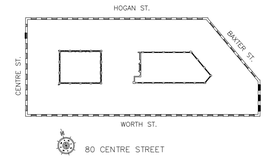
ARCH. 37-18 Northern Blvd.
Ste 319 Long Island City, NY
11101 Tel: 212.779.9772

Cost Estimate Consultant:
ELLANA INC.
32 BROADWAY, 8TH
FLOOR NEW YORK, NY
10004 TEL 212 971 0936

SITE PLAN



BLOCK: 166 LOT: 27

REVISIONS:

NUMBER	DESCRIPTION	DATE
4.	ISSUED FOR BID	6/23/2021
3.	COMPLIANCE SUBMISSION	3/26/2021
2.	100% CD SUBMISSION	1/26/2021
1.	DOB SUBMISSION	4/17/2020

Department of Design and Construction

DIVISION OF PUBLIC BUILDINGS

CAPITAL PROJECT NUMBER:

E17-0001

PROJECT

Lighting & HVAC Energy Efficiency Upgrades - Louis J. Lefkowitz Building

80 Centre Street, New York, NY, 10013

FOR THE: NYC Department of Citywide Administrative Services

DRAWING TITLE:

PLUMBING RISERS

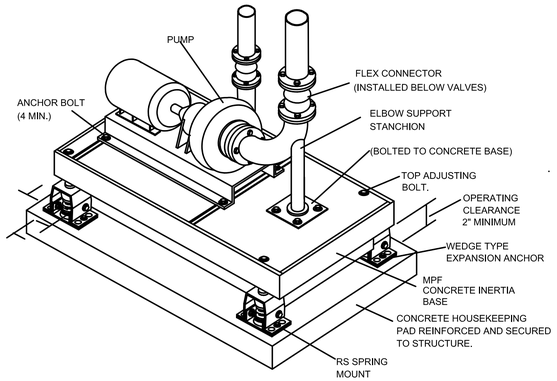
SEAL & SIGNATURE

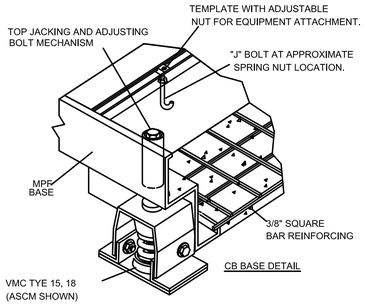
DATE:	23 JUNE, 2021
PROJECT NO:	E17-0001
DRAWN BY:	A. ATHERLEY
CHECKED BY:	J. HORADO

DRAWING NUMBER:

P-301.00

CADO FILE No:





MINIMUM EDGE DISTANCE REQUIREMENTS (FROM CENTER LINE OF ANCHOR BOLTS)

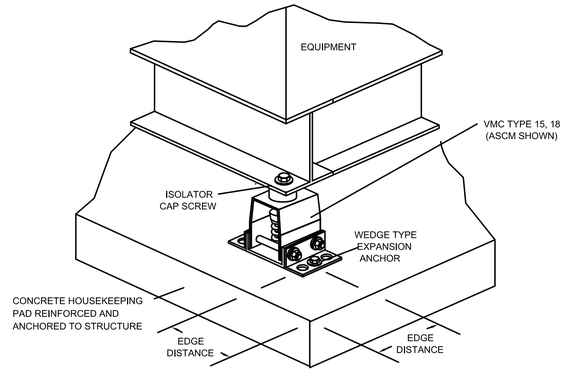
DIMENSIONS

ANCHOR DIAMETER	EDGE DISTANCE
3/8"	4 7/8"
1/2"	6 1/2"
5/8"	8 1/4"
3/4"	9 3/4"
1"	13 1/2"

NOTE:
1. RAISE BASE TO OPERATING HEIGHT AFTER CONCRETE HAS CURED.
2. LEVEL BASE WITH ISOLATORS, INSTALL EQUIPMENT AND PIPING.
3. DO NOT ADJUST ISOLATION UNTIL SYSTEM IS CHARGED.

TYPICAL INSTALLATION PUMP CONCRETE BASE

NOT TO SCALE



MINIMUM EDGE DISTANCE
REQUIREMENTS TO C OF
L
ANCHOR BOLT

ANCHOR DIAMETER	MIN. EDGE DISTANCE
3/8"	4 7/8"
1/2"	6 1/2"
5/8"	8 1/4"
3/4"	9 3/4"
1"	13 1/2"

NOTE:
1. # OF ISOLATION POINTS IN ACCORDANCE WITH EQUIPMENT MANUF. SPEC.
2. IF UNIT BASE FRAME CANNOT ACCEPT POINT LOADING, PROVIDE BASE BY ISOLATION CONTROL MANUFACTURER.

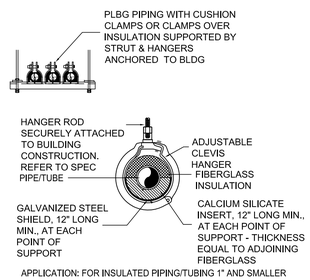
TYPICAL INSTALLATION OF FLOOR MOUNTED EQUIPMENT

NOT TO SCALE

APPLLICATION: FOR INSULATED PIPING/TUBING LARGER THAN 1"

ADJUSTABLE CLEVIS PIPE SUPPORTS

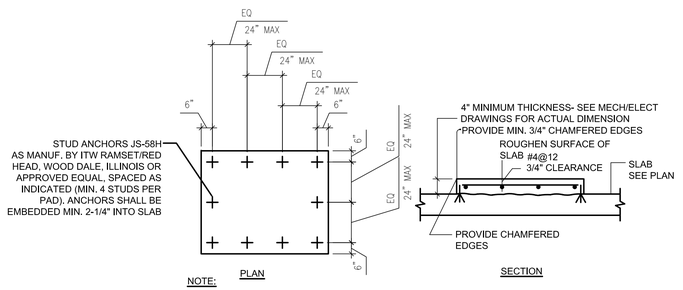
N.T.S



APPLICATION: FOR INSULATED PIPING/TUBING 1" AND SMALLER

ADJUSTABLE SWIVEL PIPE SUPPORT

N.T.S



NOTE:
1. CONCRETE STRENGTH AND WEIGHT AT 21 DAYS: 3000 PSI AND 145 PCF.
2. EXTEND PAD A MINIMUM OF 6" BEYOND EQUIPMENT ON ALL SIDES.
3. PROVIDE CONCRETE PAD FOR NEW AND RELOCATED EQUIPMENT
4. FOR APPROXIMATE SIZE AND LOCATION OF PAD. FINAL SIZE AND LOCATION TO BE DETERMINED BY CONTRACTOR AND APPROVED BY EOR.

CONCRETE EQUIPMENT PAD

N.T.S

DOB APPROVAL STAMP

Lighting & HVAC Energy Efficiency Upgrades - Louis J. Lefkowitz Building

MEP Engineers:
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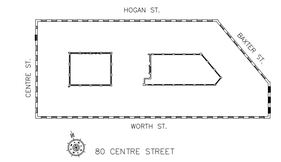
(973)808-4095 fax

Architect
CAPLES JEFFERSON
ARCH. 37-18 Northern Blvd.
Ste 319 Long Island City, NY
11101 Tel: 212.779.9772

Cost Estimate Consultant:
ELLANA INC.
32 BROADWAY, 8TH
FLOOR NEW YORK, NY
10004 TEL 212 971 0936

SITE PLAN



BLOCK: 166 LOT: 27

REVISIONS:

NUMBER	DESCRIPTION	DATE
4.	ISSUED FOR BID	6/23/2021
3.	COMPLIANCE SUBMISSION	3/26/2021
2.	100% CD SUBMISSION	1/26/2021
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Department of Design and Construction

DIVISION OF PUBLIC BUILDINGS

CAPITAL PROJECT NUMBER:
E17-0001

PROJECT
Lighting & HVAC Energy Efficiency Upgrades - Louis J. Lefkowitz Building
80 Centre Street, New York, NY, 10013

FOR THE: NYC Department of Citywide Administrative Services

DRAWING TITLE:
PLUMBING DETAILS

SEAL & SIGNATURE

DATE:	23 JUNE, 2021
PROJECT NO:	E17-0001
DRAWN BY:	A. ATHERLEY
CHECKED BY:	A. ATHERLEY

DRAWING NUMBER:
P-401.00

CADO FILE No:

GENERAL NOTES

1. ALL WORK SHALL BE PERFORMED IN STRICT ACCORDANCE WITH THE REQUIREMENTS OF THE 2008 NATIONAL ELECTRICAL CODE (NEC), THE NEW YORK CITY ELECTRICAL CODE AMENDMENTS, THE APPLICABLE SECTIONS OF THE NFPA, THE NEW YORK CITY BUILDING CODE, AND ALL GOVERNING LOCAL CODES, LAWS, AND REGULATIONS.
2. PROVIDE A COMPLETE OPERABLE SYSTEM IN A WORKMANLIKE MANNER, OUTLINE DESCRIPTION AND EQUIPMENT DO NOT LIMIT CONTRACTOR'S LIABILITY FOR THE INSTALLATION OF A COMPLETE OPERABLE SYSTEM.
3. ALL WORK SHOWN ON THE DRAWINGS NOT SPECIFICALLY CALLED OUT AS EXISTING SHALL BE CONSIDERED WORK TO BE PERFORMED UNDER THIS CONTRACT.
4. PAINT ALL NEW EXPOSED LOW VOLTAGE SYSTEM CONDUITS TO MATCH EXISTING COLOR OF THE WALL OR CEILING.
5. OBTAIN ALL ELECTRICAL PERMITS, TEST REPORTS, CERTIFICATIONS FOR T.C.O. AND C.O.
6. MINIMUM SIZE OF CONDUITS SHALL BE 3/4"C E.M.T., UNLESS OTHERWISE NOTED.
7. NO CONDUIT SHALL BE RUN IN ANY FLOOR IN CONTACT WITH THE EARTH UNLESS OTHERWISE DIRECTED ON THE PLANS.
8. CONDUIT RUNS IN CORRIDORS SHALL CLEAR ALL ARCHITECTURAL FEATURES (DOORS, WINDOWS, ETC) AND SHALL BE COORDINATED WITH EXISTING OR NEW EQUIPMENT, PIPING AND DUCT WORK CORRESPONDING TO ALL TRADES INCLUDING BUT NOT LIMITED TO MECHANICAL, PLUMBING, FIRE PROTECTION AND ELECTRICAL TRADES. NOTIFY THE ENGINEER OF ANY OBSTRUCTION BEFORE INSTALLATION. FAILURE TO COMPLY WITH THIS REQUIREMENT WILL NOT BE CONSIDERED ADDITIONAL WORK AND SHALL BE CORRECTED AT NO ADDITIONAL COST TO THE OWNER.
9. IN UNFINISHED PORTIONS OF BUILDING SUCH AS BOILER ROOM, FAN ROOMS, PIPE SPACES, ETC., LOCATIONS OF CONDUIT AND SYSTEM DEVICES ARE APPROXIMATE AND SHALL CLEAR PIPING AND ALL OTHER CONSTRUCTION. ALL SYSTEM DEVICES MUST BE UNOBSTRUCTED AND SHALL CLEAR ANY INTERFERENCE WITH FIXTURES, PIPING EQUIPMENT, ETC.
10. IN THE BOILER ROOM, SYSTEM CONDUITS SHALL NOT BE RUN OVER BOILERS.
11. RACEWAY INSTALLED EXPOSED ON THE SURFACE OF CEILINGS OR SIDEWALLS SHALL BE SUPPORTED FROM STRUCTURAL COMPONENTS OF THE BUILDING.
12. ALL RACEWAYS AND CABINETS SHALL BE GROUNDED TO THE BUILDING GROUNDING SYSTEM WITH AN INSULATED GROUND CONDUCTOR NOT SMALLER THAN #10 U.O.N.
13. UNLESS OTHERWISE NOTED, PULL BOXES,JUNCTION BOXES, AND ELECTRICAL EQUIPMENT INCLUDING BUT NOT LIMITED TO RECEPTACLES, SWITCHES, PANELS, LOW VOLTAGE SYSTEMS DEVICES,ETC WHERE INDICATED ON DRAWINGS, SHALL BE CONSIDERED SHOWN AT THEIR APPROXIMATE LOCATION. THE CONTRACTOR SHALL LOCATE THEM AS FIELD CONDITIONS DICTATE. ADDITIONAL PULL AND JUNCTION BOXES NOT SHOWN ON DRAWINGS SHALL BE PROVIDED WHERE REQUIRED BY APPLICABLE CODE PROVISIONS OR WHERE CALLED FOR BY FIELD CONDITIONS.
14. ALL RACEWAY RUNS ARE SHOWN DIAGRAMMATICALLY TO OUTLINE THE GENERAL ROUTING OF MAJOR FEEDERS. THE INSTALLATION SHALL BE MADE TO AVOID INTERFERENCE WITH PIPES, DUCTS, STRUCTURAL MEMBERS OR OTHER EQUIPMENT. SHALL ANY OF THIS ELEMENTS PREVENT THE INSTALLATION OF RACEWAY AS DELINEATED ON THIS DRAWING, DEVIATION MUST BE APPROVED BY THE ENGINEER PRIOR TO INSTALLATION. ANY VARIATION DUE TO FIELD CONDITIONS SHALL NOT REPRESENT AN ADDITIONAL COST TO OWNER.
15. ALL ELECTRICAL EQUIPMENT AND RACEWAY SHALL BE SUSPENDED FROM SUPPLEMENTAL SLOTTED CHANNEL FRAME. ALL SUCH MOUNTS, DEVICES, FASTENERS SHALL BE OF SUFFICIENT THICKNESS TO CARRY THE LOAD SUSPENDED AND CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ANY ADDITIONAL SUPPLEMENTAL STEEL REQUIRED TO SUPPORT THE EQUIPMENT OR DEVICES.
16. ALL OPENINGS BETWEEN FLOORS, THROUGH RATED FIRE AND SMOKE WALLS, CREATED BY THE CONTRACTOR FOR CABLE OR CONDUIT PASS THROUGH SHALL BE SEALED WITH A FIRE STOPPING MATERIAL. FIRE STOPPING MATERIAL AND ITS APPLICATION SHALL BE ACCOMPLISHED IN SUCH A MANNER THAT IS ACCEPTABLE TO THE LOCAL FIRE AND BUILDING AUTHORITIES HAVING JURISDICTION OVER THIS WORK. ANY OPENINGS CREATED BY OR FOR THE CONTRACTOR AND LEFT UNUSED SHALL ALSO BE SEALED AS PART OF THIS WORK.
17. CONTRACTOR TO BE RESPONSIBLE FOR ALL RESTORATIONS, SEALING, WATERPROOFING, PENETRATIONS, CORE DRILLING CUTTING, PATCHING, AND PAINTING FOR THE COMPLETE CONTRACT WORK INDICATED. ALL RESTORATION WORK PERFORMED BY CONTRACTOR SHALL RESTORE DISTURBED SURFACES TO THEIR ORIGINAL CONDITION.
18. ARCHITECTURAL FEATURES AS WELL AS OTHER TRADES EQUIPMENT SHOWN ON ELECTRICAL DRAWINGS ARE FOR BACKGROUND INFORMATION ONLY.
19. ALL EXPOSED NONCURRENT-CARRYING METAL PARTS OF ELECTRICAL EQUIPMENT AND RACEWAYS SHALL BE GROUNDED. FOR FEEDERS AND/OR BRANCH CIRCUITS WHERE GROUNDING CONDUCTOR IS NOT PROVIDED, METAL RACEWAYS AND METAL ENCLOSURES FOR CONDUCTORS SHALL BE TIGHTLY JOINED TO CREATE A CONTINUOUS ELECTRIC CIRCUIT AND SO ASSURE A PROPERLY GROUNDED SYSTEM. FITTINGS FOR JOINTS AND TERMINATIONS SHALL BE LISTED FOR GROUNDING INSTALLATION. PROVIDE BONDING JUMPERS WITH APPROVED FITTINGS OF SIZE REQUIRED FOR EQUIPMENT GROUNDING. THE CONTRACTOR SHALL ENSURE CONTINUITY OF THE GROUNDING FROM THE SUPPLYING PANELBOARD GROUNDING BUS TO THE LOAD GROUND TERMINAL.
20. ALL DEVICES AND ACCESSORIES INSTALLED OUTSIDE OR EXPOSED TO WEATHER SHALL HAVE WEATHER PROOF ENCLOSURES AND SHALL BE TIGHTLY GASKETED FOR A COMPLETE RAINTIGHT INSTALLATION.
21. UNLESS OTHERWISE NOTED, CONDUCTORS FOR POWER CIRCUITS SHALL BE OF TYPE THHN/THWN AND MINIMUM SIZE SHALL BE #12 AWG.
22. FOR ALL BRANCH CIRCUIT RATED AT 120V, 20A THAT RUNS OVER 80'-0", No. 10 AWG WIRE SIZE SHALL BE USED TO COMPENSATE FOR VOLTAGE DROP.

GENERAL NOTES (CONT.)

23. REMOVE ALL DEBRIS RESULTING FROM REMOVAL OF ELECTRICAL WORK FROM THE PREMISES.
24. ANY EXISTING WORK DAMAGED AS A RESULT OF PERFORMING THE WORK OF THIS CONTRACT SHALL BE REPAIRED OR REPLACED AS REQUIRED AT NO ADDITIONAL COST TO THE OWNER. MATERIAL AND FINISH TO MATCH EXISTING TO THE SATISFACTION OF OWNER.
25. ALL COPPER MATERIALS, LUGS, COPPER BUS DETAILS/LUGS KITS AS REQUIRED FOR OVER SIZED FEEDERS, AND DEVICES REQUIRED TO COMPLETE CONTRACT WORK, BUT NOT SHOWN, INCLUDING MODIFYING EXISTING OR NEW EQUIPMENT TO ACCEPT INCOMING AND OUTGOING CABLES, SHALL BE FURNISHED AND INSTALLED BY THE CONTRACTOR. CONTRACTOR TO PROVIDE ALL REQUIRED ELECTRICAL FINAL CONNECTIONS.
26. ALL EQUIPMENT SPECIFIED OR REQUIRED SHALL HAVE COPPER CURRENT CARRYING PARTS INCLUDING GROUND BUS AND TERMINALS.
27. PAINT ALL NEW EXPOSED LOW VOLTAGE SYSTEM CONDUITS TO MATCH EXISTING COLOR OF THE WALL OR CEILING.
28. CONTRACTOR SHALL RUN CONDUIT FOR ALL EXTERIOR LIGHTING AND DEVICES INSIDE THE BUILDING. EXTERIOR CONDUIT RUN SHALL BE LIMITED TO PENETRATION AT DEVICE LOCATION ONLY.
29. CONTRACTOR SHALL PROVIDE POWER CONNECTION CONDUIT AND WIRING TO ALL MOTORS FROM DISCONNECT SWITCH/CONTROL PANEL/ STARTERS.
30. CONTRACTOR SHALL SURVEY ALL SPACES FOR ANY DISCREPANCIES IN LIGHTING FIXTURE TYPES, QUANTITIES, AND MOUNTING TYPES, AND SHALL COORDINATE WITH E.O.R. PRIOR TO ORDERING THE LIGHTING FIXTURES.
31. LINEAR LIGHTING FIXTURES INSTALLED IN CONTINUOUS ROW SHALL BE PROVIDED WITH ACCESSORY KITS TO ENABLE CONTINUOUS ROW FIXTURE INSTALLATION.
32. PROVIDE MICROWAVE TYPE SENSORS ON FIXTURES INSTALLED 12' OR BELOW FROM FINISHED FLOOR.
33. PROVIDE PASSIVE INFRARED (PIR) TYPE SENSORS ON FIXTURES INSTALLED ABOVE 12' FROM FINISHED FLOOR.

GENERAL DEMOLITION NOTES

1. PROVIDE ALL LABOR, EQUIPMENT AND MATERIALS AS REQUIRED FOR THE COMPLETE DEMOLITION AND REMOVAL OF THE FOLLOWING BUILDING SYSTEMS:
   A) EXISTING LIGHTING FIXTURES
   B) POWER FEED TO HVAC/PLUMBING EQUIPMENT
2. THE CONTRACTOR SHALL DISCONNECT THE CIRCUIT WIRING NOT IN USE AND SHALL REMOVE ALL NECESSARY WIRING MATERIALS, INCLUDING EXPOSED CONDUITS AND JUNCTION BOXES WHICH IMPEDE THE NEW WORK.
3. SUBSTANTIAL JOB COMPLETION INCORPORATES DEMOLITION OF EXISTING SYSTEMS IN CONTRACT.
4. COORDINATE WITH SITE PERSONNEL TO MINIMIZE IMPACT OF OPERATION OF THE BUILDING DURING DEMOLITION AND CONSTRUCTION.
5. THE DEMOLITION WORK SHALL BE CARRIED ON IN EVERY RESPECT IN A THOROUGH AND WORKMANLIKE MANNER.
6. ALL DEMOLITION, REMOVAL, AND DISPOSAL WORK SHALL BE IN COMPLIANCE WITH THE REQUIREMENTS OF THE BUILDING CODE OF THE CITY OF NEW YORK AND WITH ALL STATE AND FEDERAL REGULATIONS.
7. REMOVE ALL DEBRIS NOT EXPLICITLY DESIGNATED TO BE SALVAGED (TO REMAIN) FROM THE PREMISES AND LEGALLY DISPOSE OFF AWAY FROM PREMISES.
8. ITEMS INDICATED TO BE SALVAGED SHALL BE REMOVED EITHER BEFORE DEMOLITION OR DURING THE PROCESS OF THE WORK, STORED AND PROTECTED ON THE SITE IN A LOCATION DESIGNATED BY THE AUTHORITY'S REPRESENTATIVE. THESE ITEMS WILL BE IDENTIFIED AND RETAINED BY THE AUTHORITY.
9. CAREFULLY REMOVE AND PROTECT ALL ITEMS TO BE SAVED AND REUSED AS INDICATED ON DRAWINGS, REPLACE ANY ITEMS THAT ARE DAMAGED BY REMOVAL AT YOUR OWN COST. NOTIFY THE AUTHORITY IN WRITING OF ANY ITEM THAT IS DAMAGED PRIOR TO REMOVAL SO THAT THEY MAY ASCERTAIN THE ITEM'S CONDITION.
10. PROTECT MATERIALS, SURFACES AND STRUCTURE, WHICH ARE TO REMAIN, FROM DAMAGE; IF DAMAGE OCCURS, REPAIR OR REPLACEMENT SHALL BE MADE BY THE CONTRACTOR, TO THE SATISFACTION OF THE AUTHORITY, AND AT THE EXPENSE OF THE CONTRACTOR.
11. MAINTAIN CONTINUITY FOR ALL EQUIPMENT TO REMAIN. PROVIDE ALL REQUIRED ACCESSORIES, WIRING AND CONDUIT AS REQUIRED.
12. VISIT AND EXAMINE CAREFULLY THE AREAS AFFECTED BY THIS WORK TO BECOME FAMILIAR WITH EXISTING CONDITIONS AND WITH THE DIFFICULTIES THAT ATTEND THE EXECUTION OF THIS WORK. LATER CLAIMS WILL NOT BE RECOGNIZED FOR EXTRA LABOR, EQUIPMENT, OR MATERIALS REQUIRED BECAUSE OF DIFFICULTIES ENCOUNTERED.
13. SAFEGUARD ALL REMOVED ITEMS AND DISPOSE OF AS DIRECTED BY DESIGNATED PROJECT OFFICER.
14. AT THE COMPLETION OF DEMOLITION WORK, ALL RUBBISH, DEBRIS AND WASTE MATERIALS SHALL BE REMOVED BY THE CONTRACTOR AND THE PREMISES SHALL BE LEFT IN CLEAN CONDITION.
15. MAINTAIN CONTINUOUS SERVICE ON FEEDERS SERVING THE AREAS AFFECTED DURING ALL THE PERIOD THE AREA IS UNDER CONSTRUCTION. NO OUTAGES WILL BE PERMITTED IN THESE AREAS DUE TO THE CONSTRUCTION PHASE. ALL WORK REQUIRING TEMPORARY SHUTDOWN SHALL BE PERFORMED AT NO ADDITIONAL COST TO THE OWNER. ANY REQUEST FOR SHUTDOWNS SHOULD BE BROUGHT TO THE ATTENTION OF THE NYCDDC, DCAS BUILDING ENGINEER AND IT MUST BE NOTIFIED 72 (SEVENTY-TWO) HOURS IN ADVANCE.WORK SHALL NOT BE PERFORMED WITHOUT WRITTEN APPROVAL.

GENERAL DEMOLITION NOTES

16. DEMOLITION WORK OF POWER SYSTEMS SHALL INCLUDE DISCONNECTION AND REMOVAL OF THE EXISTING ELECTRICAL SERVICE EQUIPMENT, POWER DISTRIBUTION EQUIPMENT AND PANELBOARDS INCLUDING BUT NOT LIMITED TO ENCLOSURES, BUSES, OVERCURRENT PROTECTION DEVICES, ETC. WIRING AND CONDUIT SHALL BE REMOVED AS SHOWN 0N DRAWINGS.

ABBREVIATIONS

SYMBOL	DESCRIPTION
A, AMPS	AMPERE
AC	ALTERNATING CURRENT
A/C	AIR CONDITIONING
AF/AT	AMPERE FRAME/AMPERE TRIP
AFF	ABOVE FINISHED FLOOR
ARCH	ARCHITECTURAL
AS/AF	AMPERE SWITCH / AMPERE FUSE
A/C	AIR CONDITIONING
AWG	AMERICAN WIRE GAUGE
BG	BREAK GLASS
C	CONDUIT
CAB	CABINET
CAT	CATEGORY
CB	CIRCUIT BREAKER
CKT	CIRCUIT
CL	CLOSET
CLG	CEILING
CMS	COMBINATION MAGNETIC STARTER
C.O	CERTIFICATE OF OCCUPANCY
CONST	CONSTRUCTION
COL	COLUMN
CORR	CORRIDOR
CS	CONTROL STATION
CU	COPPER
CUST	CUSTODIAN
DISC	DISCONNECT
DOE	DEPARTMENT OF EDUCATION
DWG	DRAWING
EC	EMPTY CONDUIT
ECL	ELECTRICAL CLOSET
ELEC	ELECTRIC
ELEC	ELECTRIC
EM	EMERGENCY LIGHTING
EMER	EMERGENCY
ER	EXISTING TO REMAIN
ETC	ETCETERAS
ETR	EXISTING TO BE RELOCATED
EXH	EXHAUST
EXIST	EXISTING
FA	FIRE ALARM
FACP	FIRE ALARM CONTROL PANEL
FL	FLOOR
FMC	FLEXIBLE METALLIC TUBING
G, GND	GROUND
H	HOT (PHASE)
HT	HEIGHT
HP	HORSEPOWER
JB	JUNCTION BOX
KVA	KILOVOLT AMPERE
KW	KILOWATT
KWH	KILOWATT HOUR
LTG	LIGHTING
MDB	MAIN DISTRIBUTION BOARD
MCB	MAIN CIRCUIT BREAKER
MECH	MECHANICAL
MER	MECHANICAL EQUIPMENT ROOM
MIN	MINIMUM
MNS	MANUAL STARTER
MTD	MOUNTED
MS	MAGNETIC STARTER
MSS	MAIN SERVICE SWITCHBOARD
N	NEUTRAL
N.C.	NORMALLY CLOSED
NEC	NATIONAL ELECTRICAL CODE
NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
N.O.	NORMALLY OPEN
No	NUMBER
NTS	NOT TO SCALE
P	POLE
PB	PULL BOX
PNL	PANEL
RC	REMOTE CONTROL
RGS	RIGID GALVANIZED STEEL CONDUIT
RM	ROOM
RNMC	RIGID NON-METALLIC CONDUIT
RL	RELOCATED
S	SPEAKER
SCH	SCHEDULE
SP	SPARE
STD	STANDARD
SW	SWITCH
SYST	SYSTEM
T.C.O.	TEMPORARY CERTIFICATE OF OCCUPANCY
TC	TIME CLOCK
TELCOMM	TELECOMMUNICATION
TEL	TELEPHONE
TYP	TYPICAL
UON	UNLESS OTHERWISE NOTED
V	VOLT
VDC	DIRECT CURRENT VOLTAGE
W	WATT, WIRE, WIDTH
WP	WEATHERPROOF

LIGHTING & POWER SYMBOLS

- SYMBOLS SHOWN WITH DARK SOLID LINES INDICATES NEW WORK IN CONTRACT
- SYMBOLS SHOWN WITH LIGHT SOLID LINES INDICATES EXISTING WORK IN CONTRACT
- SYMBOLS SHOWN WITH DARK DASHED LINES - INDICATES DEMOLITION WORK IN CONTRACT
- S3LaLV (k) WALL MOUNTED 20A TOGGLE SWITCH. 'a' INDICATES CONTROLLED LIGHTING FIXTURE, '3' INDICATES 3-WAY SWITCH, 'L' INDICATES LOW VOLTAGE WIRELESS SWITCH, 'k' INDICATES KEY OPERATED SWITCH. 'LV' INDICATES WIRELESS 4 POSITION LOW VOLTAGE WALL MOUNTED SWITCH FOR BI-LEVEL SWITCHING.
- 2'x4' LIGHTING FIXTURE
- 1'x4', LIGHTING FIXTURE
- 2'x2', LIGHTING FIXTURE
- 1'x8', LIGHTING FIXTURE
- 4' STRIP LIGHTING FIXTURE
- ARCHITECTURE WALL MOUNTED LIGHTING FIXTURE
- ARCHITECTURE WALL MOUNTED LIGHTING FIXTURE
- LIGHT SOCKET WITH CFL BULB
- EMERGENCY LIGHTING WITH BATTERY PACK
- COMBINATION THREE HEAD EXIT/EMERGENCY LIGHTING FIXTURE WITH BATTERY PACK

LIGHTING & POWER SYMBOLS (CONT.)

- OCC — OCCUPANCY SENSOR CEILING MOUNTED
- VAC — VACANCY SENSOR CEILING MOUNTED
- OS — OCCUPANCY SENSOR COMBINATION WALL MOUNTED SWITCH
- VS — VACANCY SENSOR COMBINATION WALL MOUNTED SWITCH
- COMPACT FLUORESCENT DOWNLIGHT FIXTURE.
- EXIT SIGN, ONE FACE ILLUMINATED
- DIRECTIONAL EXIT SIGN, ONE FACE ILLUMINATED
- DIRECTIONAL EXIT SIGN, TWO FACES ILLUMINATED
- MULTI-DIRECTIONAL EXIT SIGN, ONE FACE ILLUMINATED
- CP — CONTROL PANEL
- MAGNETIC MOTOR STARTER WITH HOA SELECTOR SWITCH.
- 30 VFD — 240V, 3POLE, VARIABLE FREQUENCY DRIVE AND COMBINATION UNFUSED SAFETY DISCONNECT SWITCH. '30' INDICATES 30A SWITCH.
- (2) MOTOR, NUMBER INDICATES HORSE POWER RATING

TYPICAL LIGHTING CONTROL REQUIREMENTS PER SPACE

SPACE **	BUILT-IN MULTI-SENSOR MODE **
COURT ROOMS	VACANCY
CLOSED OFFICE SPACES	VACANCY
OPEN OFFICE SPACES	OCCUPANCY
ELECTRICAL/MECHANICAL ROOMS	--
CORRIDORS *	OCCUPANCY
RESTROOMS	OCCUPANCY
COPY/PRINTROOM	VACANCY
STORAGE ROOMS	VACANCY
CONFERENCE ROOMS	VACANCY
CONFINEMENT CELL	VACANCY
LOCKER ROOMS	VACANCY
LOUNGE/BREAKROOM	VACANCY
SALES AREA	--
STAIRWAY *	OCCUPANCY
WORKSHOP	VACANCY

* LIGHTING SHALL BE DIMMED TO 50% WHEN SPACE IS UNOCCUPIED
** DAY HARVESTING MODE SHALL BE ACTIVATED IN SPACE WITH WINDOWS AND AS PER ASHRAE 90.1 2013 CODE REQUIREMENTS.

LIGHTING FIXTURE SCHEDULE

TYPE	SYMBOL	MOUNTING	SIZE	DESCRIPTION	LAMPS	LOCATION	MANUFACTURER OR APPROVED EQUAL	CATALOG	REMARKS
A A-sm		PENDANT	1' X 4'	PENDANT MOUNTED DIRECT/INDIRECT LIGHTING FIXTURES	LED	OFFICES/COURT ROOMS	H.E. WILLIAMS	SDI5-4-L16/835-DMA-70U/30D-ACY/D48-LA-R1/DA-UNV SDI5-4-L16/835-DMA-70U/30D-ACY/D48-LA-R1-MW/DA-UNV	
B1 B1-sm		PENDANT	1' X 4'	PENDANT MOUNTED NARROW STRIP LED LIGHTING FIXTURE	LED	ELECTRICAL CLOSETS	H.E. WILLIAMS	75R-4-L40/835-LA-R1/DA-UNV 75R-4-L40/835-LA-R1-PIR-HBB/DA-UNV	
B2 B2-sm		SURFACE	1' X 4'	SURFACE MOUNTED NARROW STRIP LED LIGHTING FIXTURE	LED	ELECTRICAL CLOSETS	H.E. WILLIAMS	75R-4-L40/835-LA-R1/DA-UNV 75R-4-L40/835-LA-R1-PIR-HBB/DA-UNV	
C1 C1-sm		PENDANT	1' X 4'	SLIM, LOW PROFILE PENDANT MOUNT LED LIGHTING FIXTURE	LED	ELEVATOR LOBBIES/CORRIDORS	H.E. WILLIAMS	LLMS-4-L41/835-LA-R1/DA-UNV LLMS-4-L41/835-LA-R1-PIR-HBB/DA-UNV	
C2 C2-sm		SURFACE	1' X 4'	SLIM, LOW PROFILE SURFACE MOUNT LED LIGHTING FIXTURE	LED	ELEVATOR LOBBIES/CORRIDORS	H.E. WILLIAMS	LLMS-4-L41/835-LA-R1/DA-UNV LLMS-4-L41/835-LA-R1-PIR-HBB/DA-UNV	
D		PENDANT	1' X 4'	4" SUSPENDED-CONTINUOUS LED LIGHTING FIXTURE	LED	GENERAL OFFICE (SIXTH FLOOR)	H.E. WILLIAMS	MX4U-4-L8/835-LA-R1/DA-UNV	INSTALL SENSOR MODULE AS INDICATED ON DRAWINGS
E1 E1-sm		PENDANT	2' X 4'	PENDANT MOUNT LED LIGHTING FIXTURE	LED	CORRIDORS/OFFICES	H.E. WILLIAMS	39-4-L84/835-A-AC(Y12)/D-48-LA-R1/DA-UNV 39-4-L84/835-A-AC(Y12)/D-48-LA-R1-PIR-HBE/DA-UNV	
E2 E2-sm		SURFACE	2' X 4'	SURFACE MOUNT LED LIGHTING FIXTURE	LED	CORRIDORS/OFFICES	H.E. WILLIAMS	39-4-L84/835-A-LA-R1/DA-UNV 39-4-L84/835-A-LA-R1-PIR-HBE/DA-UNV	
F F-sm		RECEESED	2' X 4'	CURVED FLOATING CENTER LED ARCHITECTURE TROFFER	LED	CONFERENCE ROOMS/OFFICES	H.E. WILLIAMS	AT1-24-L40/835-D-LA-R1/DA-UNV AT1-24-L40/835-D-LA-R1-MW/DA-UNV	
G G-sm		RECEESED	2' X 2'	CURVED FLOATING CENTER LED ARCHITECTURE TROFFER	LED	OFFICES	H.E. WILLIAMS	AT1-22-L40/835-D-LA-R1/DA-UNV AT1-22-L40/835-D-LA-R1-MW/DA-UNV	
H1 H1-sm		PENDANT	1' X 8'	PENDANT MOUNT LED LIGHTING FIXTURE	LED	OFFICES	H.E. WILLIAMS	39-8-L168/835-A-AC(Y12)/D-48-LA-R1/DA-UNV 39-8-L168/835-A-AC(Y12)/D-48-LA-R1-PIR-HBE/DA-UNV	
H2 H2-sm		SURFACE	1' X 8'	SURFACE/PENDANT MOUNT LED LIGHTING FIXTURE	LED	OFFICES	H.E. WILLIAMS	39-8-L168/835-A-LA-R1/DA-UNV 39-8-L168/835-A-LA-R1-PIR-HBE/DA-UNV	
I I-sm		PENDANT	1' X 8'	PENDANT MOUNTED DIRECT/INDIRECT LIGHTING FIXTURES	LED	OFFICES	H.E. WILLIAMS	SDI5-8-L16/835-DMA-70U/30D-ACY/D48-LA-R1/DA-UNV SDI5-8-L16/835-DMA-70U/30D-ACY/D48-LA-R1-MW/DA-UNV	
J1		RECESSED	6"	RECESSED 6" DOWN LIGHT FIXTURE	LED	LOBBY/CORRIDOR	H.E. WILLIAMS	6DR-TL-L40/835-LA-R1/DA-UNV	
J2		RECESSED	8"	RECESSED 8" DOWN LIGHT FIXTURE	LED	LOBBY/CORRIDOR	H.E. WILLIAMS	8DR-L40/835-LA-RA/DA-UNV	
K		RECEESED	2' X 4'	VANDAL RESISTANT RECESSED LED LIGHTING FIXTURE	LED	HOLDING CELL/AREA	H.E. WILLIAMS	VDIL-S24-L45/835-F-DIM-UNV	

LIGHTING FIXTURE SCHEDULE 1
NOT TO SCALE

DOB APPROVAL STAMP

Lighting & HVAC Energy Efficiency Upgrades - Louis J. Lefkowitz Building

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Architect
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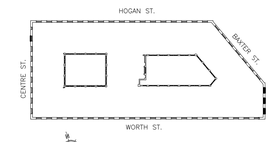
11101 Tel: 212.779.9772

Cost Estimate Consultant:
ELLANA INC.
32 BROADWAY, 8TH
FLOOR NEW YORK, NY
10004 TEL 212 971 0936

SITE PLAN



BLOCK: 166 LOT: 27

REVISIONS:

NUMBER	DESCRIPTION	DATE
4.	ISSUED FOR BID	6/23/2021
3.	COMPLIANCE SUBMISSION	3/26/2021
2.	100% CD SUBMISSION	1/26/2021
1.	DOB SUBMISSION	4/17/2020

Department of Design and Construction

DIVISION OF PUBLIC BUILDINGS

CAPITAL PROJECT NUMBER:
E17-0001

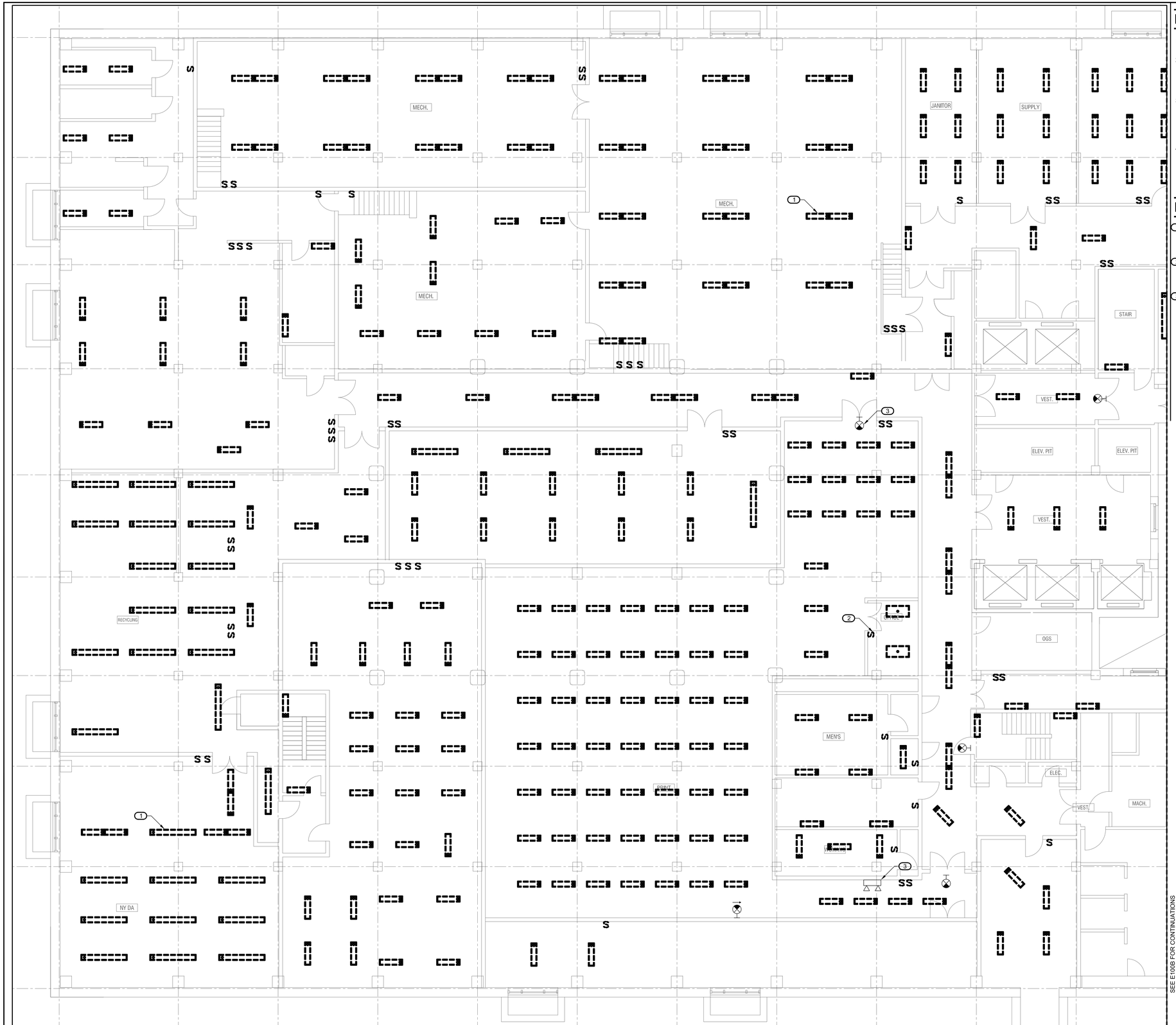
PROJECT
Lighting & HVAC Energy Efficiency Upgrades - Louis J. Lefkowitz Building
80 Centre Street, New York, NY, 10013

FOR THE: NYC Department of Citywide Administrative Services

DRAWING TITLE:
GENERAL NOTES, ABBREVIATIONS, AND ELECTRICAL SYMBOL LIST

SEAL & SIGNATURE

DATE:	23 JUNE, 2021
PROJECT NO:	E17-0001
DRAWN BY:	
CHECKED BY:	
DRAWING NUMBER:	E-001.00
CADO FILE No:	27 OF 63



BASEMENT FLOOR ELECTRICAL LIGHTING DEMOLITION PLAN - WEST 1

SCALE: 1/8"=1'-0" 0 4' 28' 4' 12'

NOTES

1. FOR SYMBOLS, ABBREVIATIONS AND NOTES REFER TO DRAWING E001.
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DOB APPROVAL STAMP

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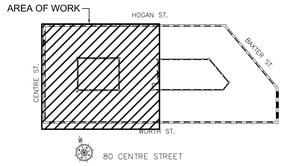
SITE PLAN



BLOCK: 166 LOT: 27

REVISIONS:

NUMBER	DESCRIPTION	DATE
4.	ISSUED FOR BID	6/23/2021
3.	COMPLIANCE SUBMISSION	3/26/2021
2.	100% CD SUBMISSION	1/26/2021
1.	DOB SUBMISSION	4/17/2020

Department of Design and Construction

DIVISION OF PUBLIC BUILDINGS

CAPITAL PROJECT NUMBER:
E17-0001

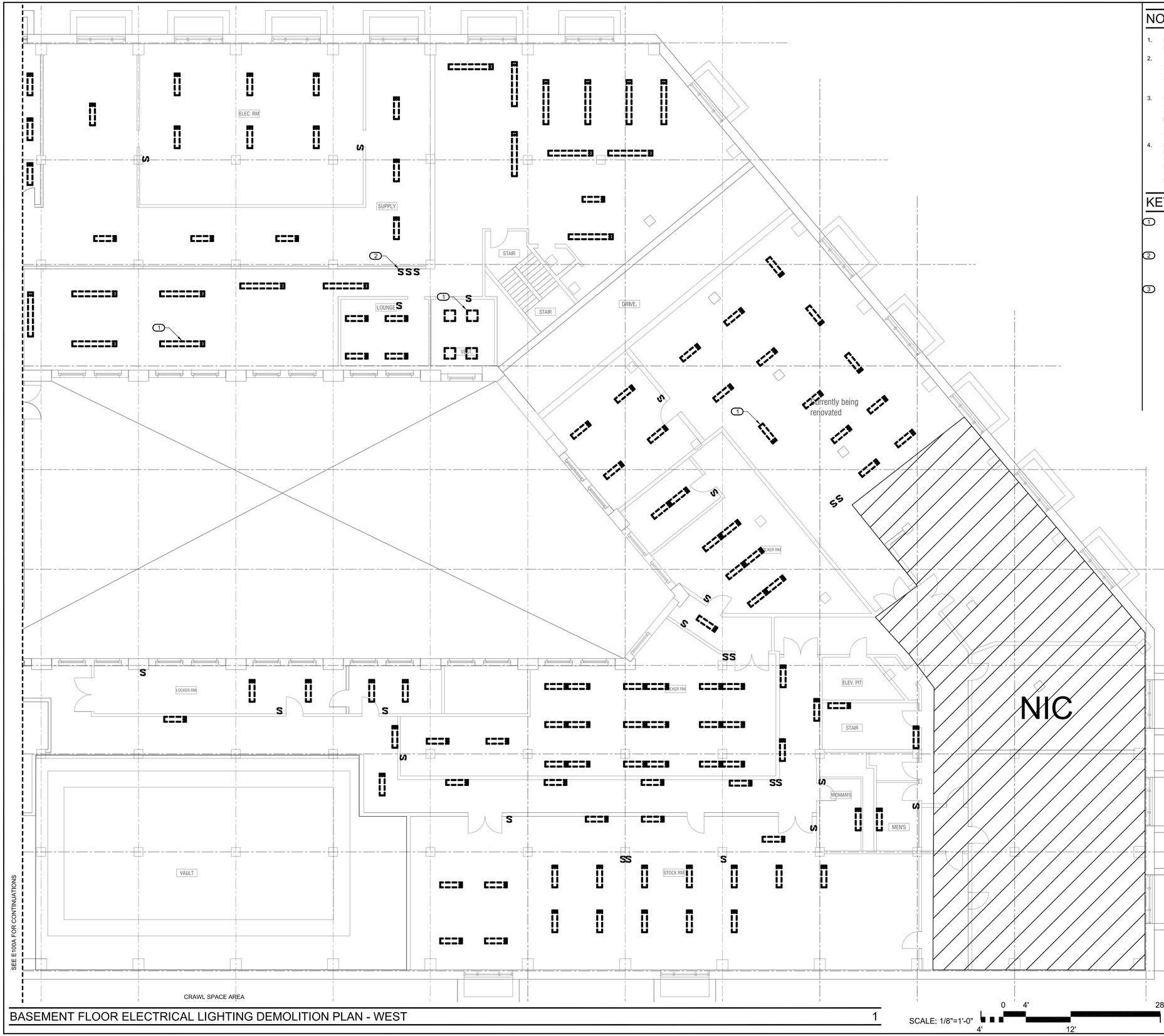
PROJECT
Lighting & HVAC Energy Efficiency Upgrades - Louis J. Lefkowitz Building
80 Centre Street, New York, NY, 10013

FOR THE: NYC Department of Citywide Administrative Services

DRAWING TITLE:
BASEMENT FLOOR ELECTRICAL LIGHTING DEMOLITION PLAN - WEST

SEAL & SIGNATURE

DATE: 23 JUNE, 2021
PROJECT NO: E17-0001
DRAWN BY:
CHECKED BY:
DRAWING NUMBER:
E-100A.00
CADO FILE No:
28 OF 63



BASEMENT FLOOR ELECTRICAL LIGHTING DEMOLITION PLAN - WEST 1

SCALE: 1/8"=1'-0" 0 4' 28' 4' 12'

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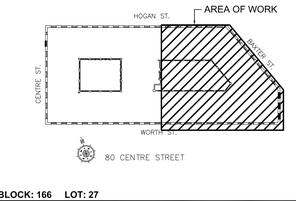


BLOCK: 166 LOT: 27

REVISIONS:

NUMBER	DESCRIPTION	DATE
4.	ISSUED FOR BID	6/23/2021
3.	COMPLIANCE SUBMISSION	3/26/2021
2.	100% CD SUBMISSION	1/26/2021
1.	DOB SUBMISSION	4/17/2020

Department of Design and Construction

DIVISION OF PUBLIC BUILDINGS

CAPITAL PROJECT NUMBER:
E17-0001

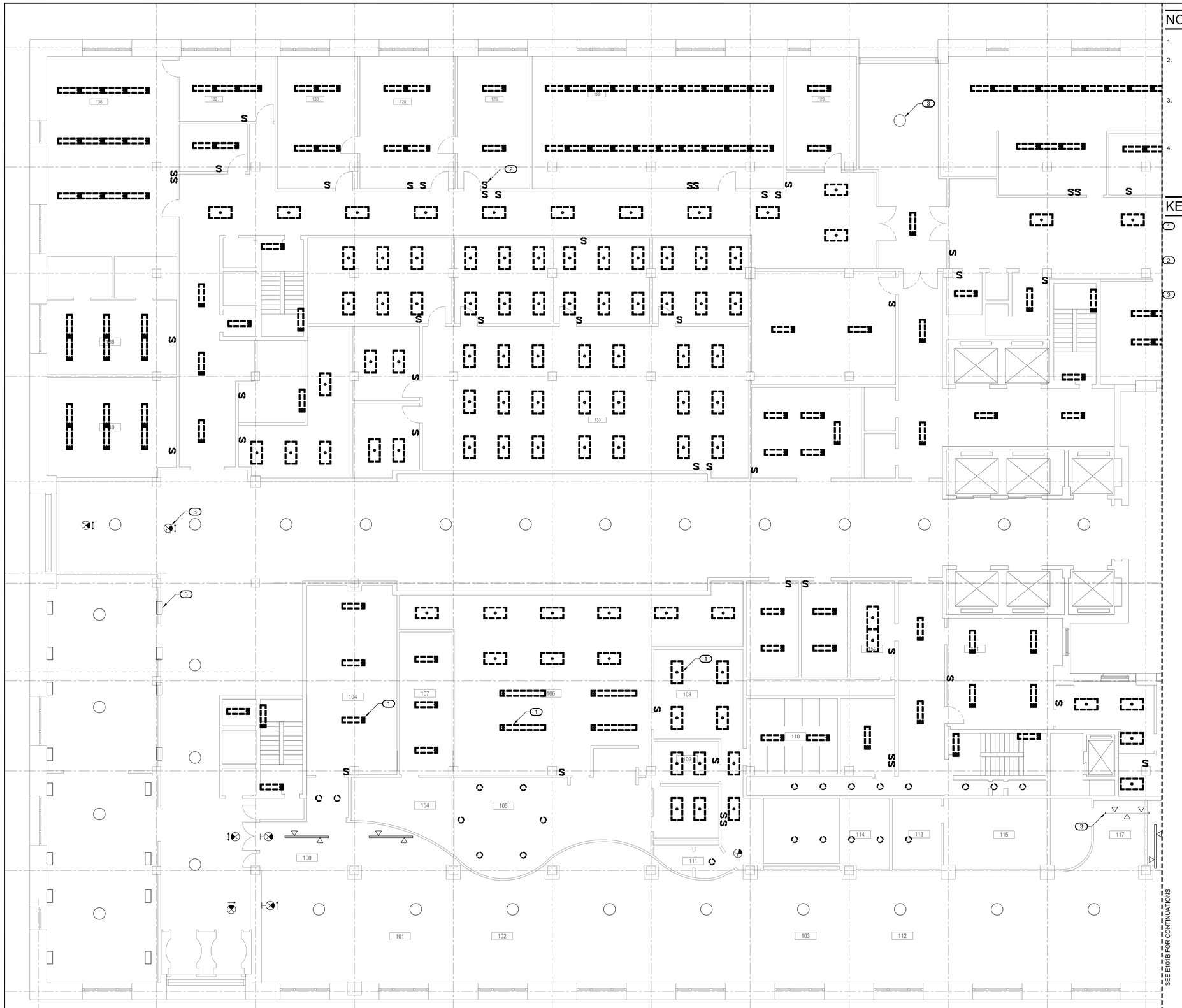
PROJECT
Lighting & HVAC Energy Efficiency Upgrades - Louis J. Lefkowitz Building
80 Centre Street, New York, NY, 10013

FOR THE: NYC Department of Citywide Administrative Services

DRAWING TITLE:
BASEMENT FLOOR ELECTRICAL LIGHTING DEMOLITION PLAN - EAST

SEAL & SIGNATURE

DATE: 23 JUNE, 2021
PROJECT NO: E17-0001
DRAWN BY:
CHECKED BY:
DRAWING NUMBER:
E-100B.00
CADO FILE No:



FIRST FLOOR ELECTRICAL LIGHTING DEMOLITION PLAN - WEST 1

SCALE: 1/8"=1'-0" 0 4' 28' 4' 12'

NOTES

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DOB APPROVAL STAMP

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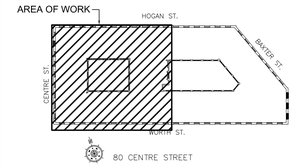
SITE PLAN



BLOCK: 166 LOT: 27

REVISIONS:

NUMBER	DESCRIPTION	DATE
4.	ISSUED FOR BID	6/23/2021
3.	COMPLIANCE SUBMISSION	3/26/2021
2.	100% CD SUBMISSION	1/26/2021
1.	DOB SUBMISSION	4/17/2020

Department of Design and Construction

DIVISION OF PUBLIC BUILDINGS

CAPITAL PROJECT NUMBER:
E17-0001

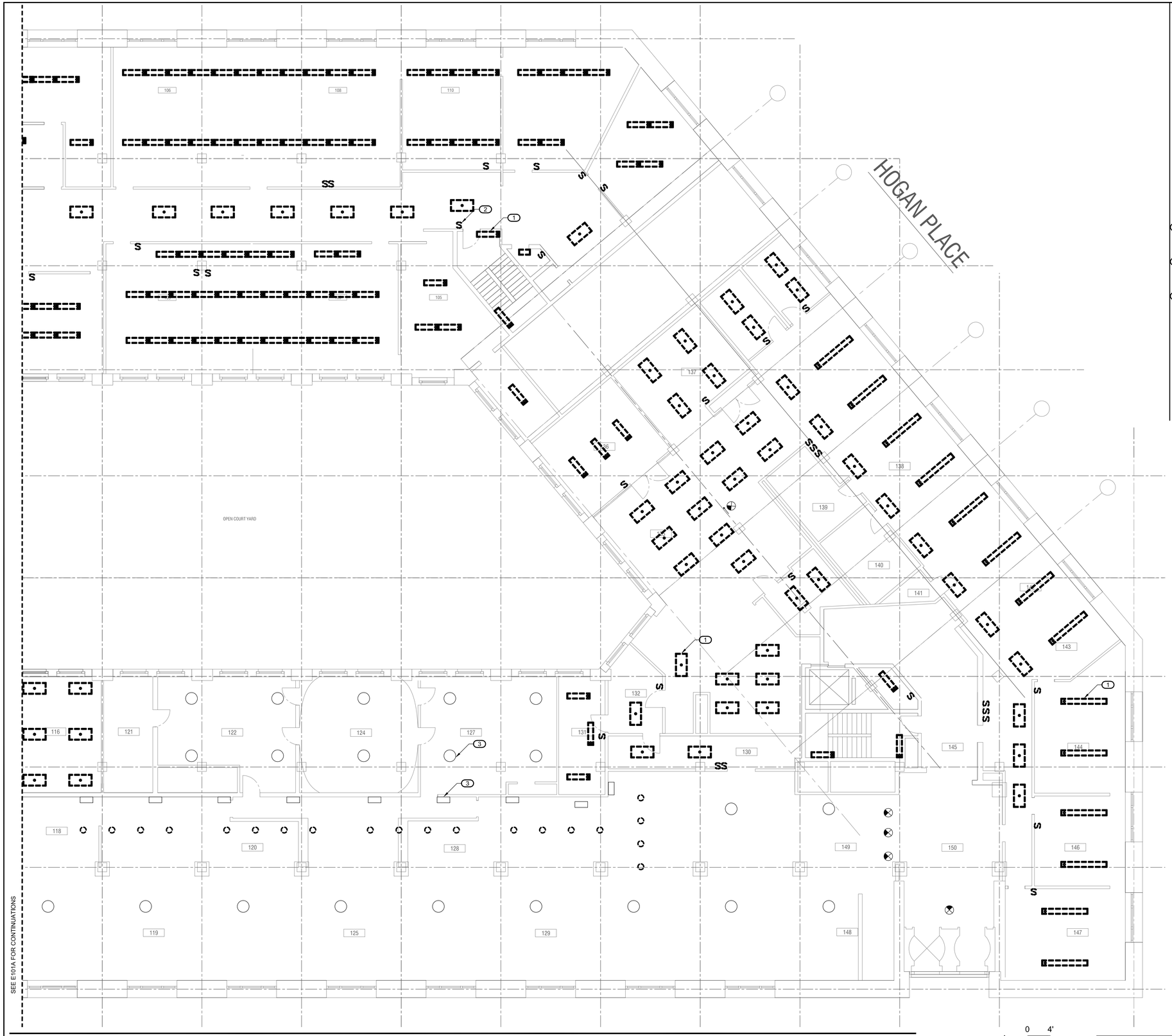
PROJECT
Lighting & HVAC Energy Efficiency Upgrades - Louis J. Lefkowitz Building
80 Centre Street, New York, NY, 10013

FOR THE: NYC Department of Citywide Administrative Services

DRAWING TITLE:
FIRST FLOOR ELECTRICAL LIGHTING DEMOLITION PLAN - WEST

SEAL & SIGNATURE

DATE: 23 JUNE, 2021
PROJECT NO: E17-0001
DRAWN BY:
CHECKED BY:
DRAWING NUMBER:
E-101A.00
CADO FILE No:
30 OF 63



FIRST FLOOR ELECTRICAL LIGHTING DEMOLITION PLAN - EAST 1

SCALE: 1/8"=1'-0"

0 4' 28'

4' 12'

NOTES

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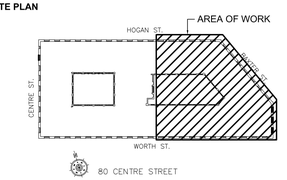
SITE PLAN



BLOCK: 166 LOT: 27

REVISIONS:

NUMBER	DESCRIPTION	DATE
4.	ISSUED FOR BID	6/23/2021
3.	COMPLIANCE SUBMISSION	3/26/2021
2.	100% CD SUBMISSION	1/26/2021
1.	DOB SUBMISSION	4/17/2020

Department of Design and Construction

DIVISION OF PUBLIC BUILDINGS

CAPITAL PROJECT NUMBER:
E17-0001

PROJECT
Lighting & HVAC Energy Efficiency Upgrades - Louis J. Lefkowitz Building
80 Centre Street, New York, NY, 10013

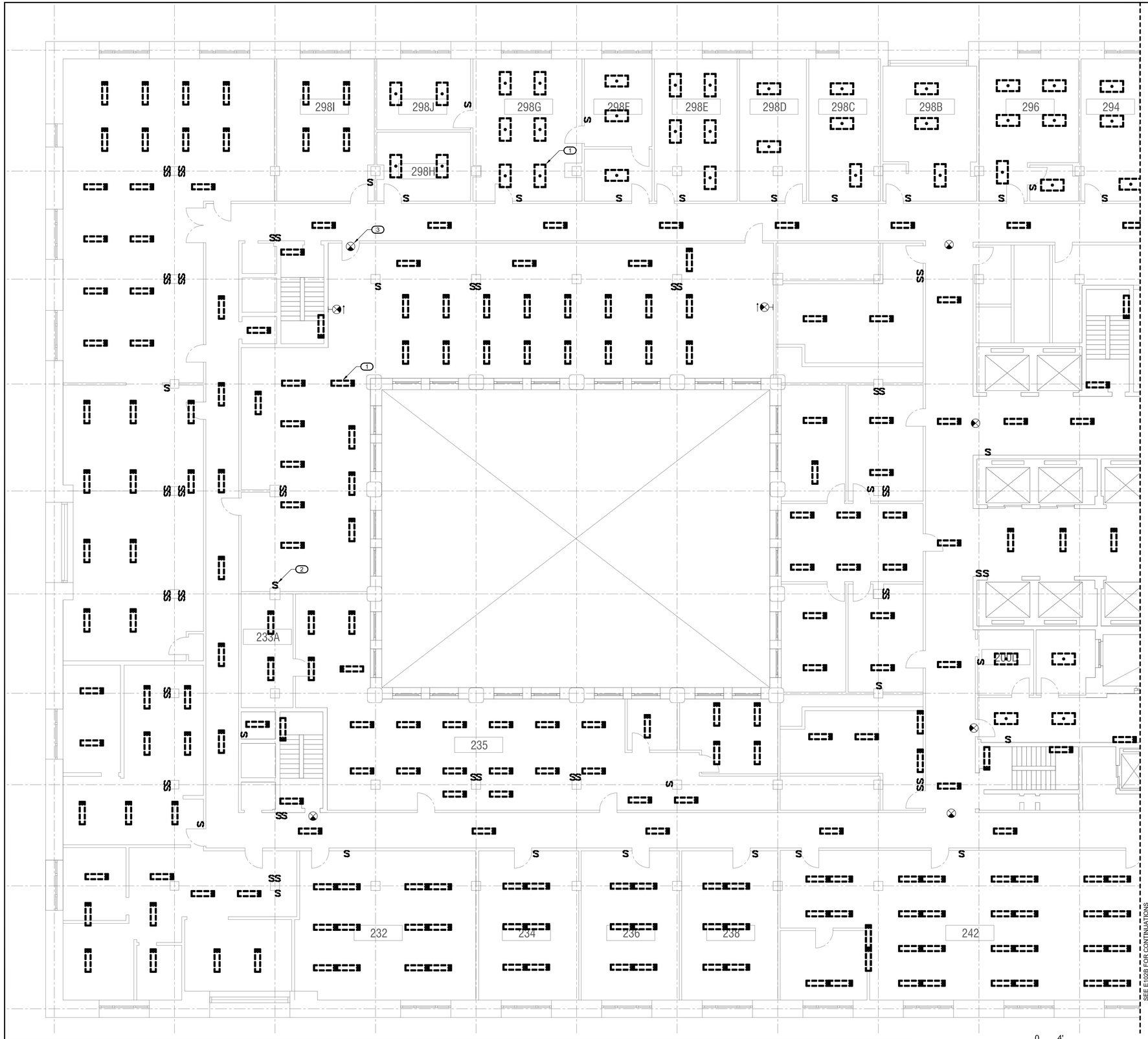
FOR THE: NYC Department of Citywide Administrative Services

DRAWING TITLE:
FIRST FLOOR ELECTRICAL LIGHTING DEMOLITION PLAN - EAST

DOB APPROVAL STAMP

SEAL & SIGNATURE

DATE:	23 JUNE, 2021
PROJECT NO:	E17-0001
DRAWN BY:	
CHECKED BY:	
DRAWING NUMBER:	E-101B.00
CADO FILE No:	



SECOND FLOOR ELECTRICAL LIGHTING DEMOLITION PLAN - WEST 1

SCALE: 1/8"=1'-0" 0 4' 28' 4' 12'

NOTES

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MEP Engineers:
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(973)808-4090 phone
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Architect
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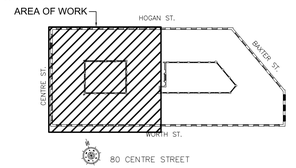
11101 Tel: 212.779.9772

Cost Estimate Consultant:
ELLANA INC.
32 BROADWAY, 8TH
FLOOR NEW YORK, NY
10004 TEL 212 971 0936

SITE PLAN



BLOCK: 166 LOT: 27

REVISIONS:

NUMBER	DESCRIPTION	DATE
4.	ISSUED FOR BID	6/23/2021
3.	COMPLIANCE SUBMISSION	3/26/2021
2.	100% CD SUBMISSION	1/26/2021
1.	DOB SUBMISSION	4/17/2020

Department of Design and Construction

DIVISION OF PUBLIC BUILDINGS

CAPITAL PROJECT NUMBER:
E17-0001

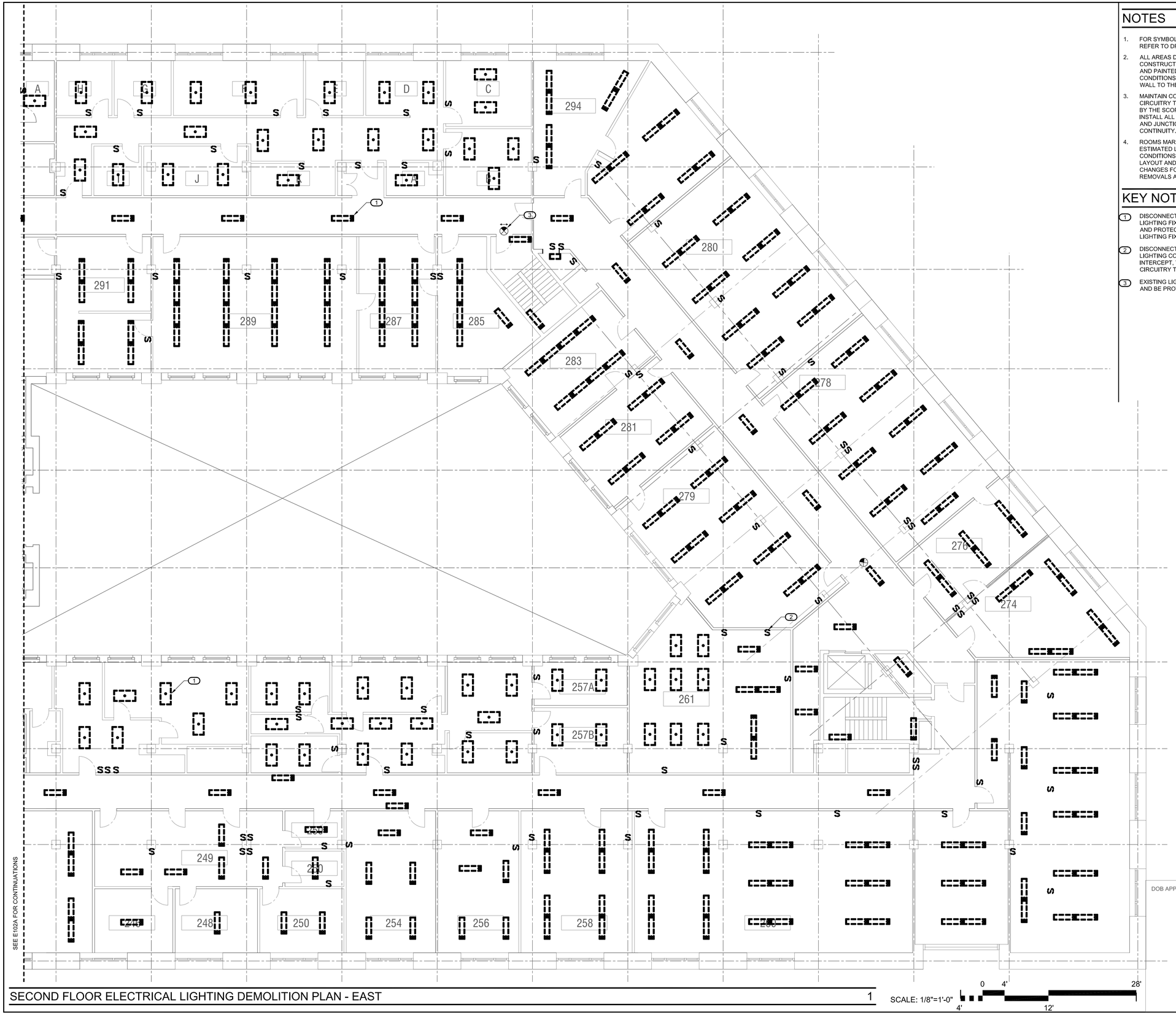
PROJECT
Lighting & HVAC Energy Efficiency Upgrades - Louis J. Lefkowitz Building
80 Centre Street, New York, NY, 10013

FOR THE: NYC Department of Citywide Administrative Services

DRAWING TITLE:
SECOND FLOOR ELECTRICAL LIGHTING DEMOLITION PLAN - WEST

SEAL & SIGNATURE

DATE: 23 JUNE, 2021
PROJECT NO: E17-0001
DRAWN BY:
CHECKED BY:
DRAWING NUMBER:
E-102A.00
CADO FILE No:
32 OF 63



SECOND FLOOR ELECTRICAL LIGHTING DEMOLITION PLAN - EAST 1

SCALE: 1/8"=1'-0" 0 4' 28' 4' 12'

NOTES

1. FOR SYMBOLS, ABBREVIATIONS AND NOTES REFER TO DRAWING E001.
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KEY NOTES

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(2) DISCONNECT POWER CONNECTION TO LIGHTING CONTROL SWITCH. IDENTIFY, INTERCEPT, TAG AND PROTECT BRANCH CIRCUITRY TO THE SWITCH FOR REUSE.

(3) EXISTING LIGHTING FIXTURE SHALL REMAIN AND BE PROTECTED FOR REUSE.

DOB APPROVAL STAMP

Lighting & HVAC Energy Efficiency Upgrades - Louis J. Lefkowitz Building

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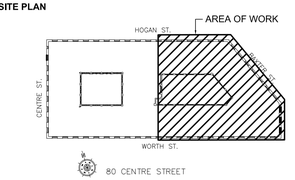
SITE PLAN



BLOCK: 166 LOT: 27

REVISIONS:

NUMBER	DESCRIPTION	DATE
4.	ISSUED FOR BID	6/23/2021
3.	COMPLIANCE SUBMISSION	3/26/2021
2.	100% CD SUBMISSION	1/26/2021
1.	DOB SUBMISSION	4/17/2020

Department of Design and Construction

DIVISION OF PUBLIC BUILDINGS

CAPITAL PROJECT NUMBER:
E17-0001

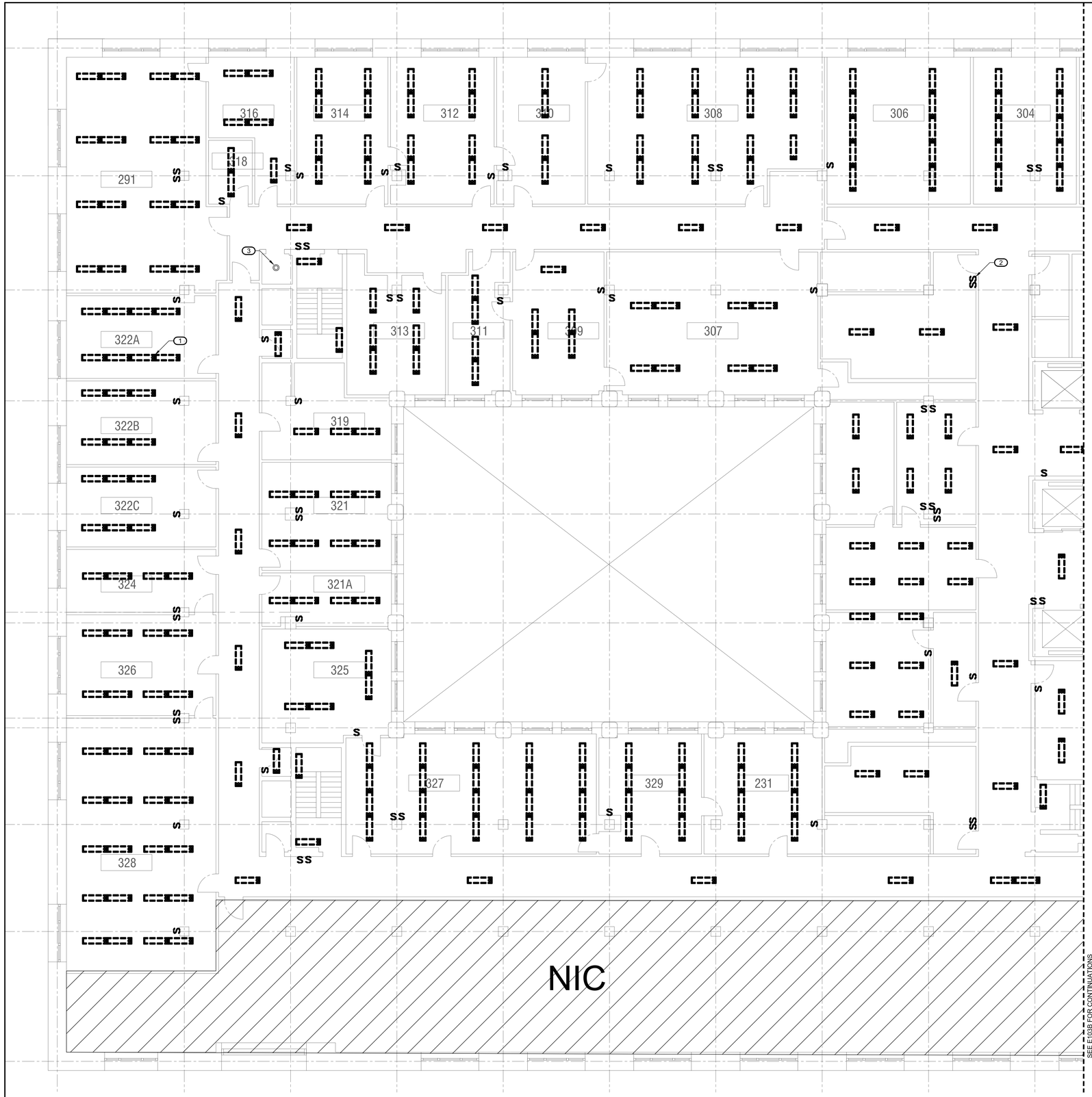
PROJECT
Lighting & HVAC Energy Efficiency Upgrades - Louis J. Lefkowitz Building
80 Centre Street, New York, NY, 10013

FOR THE: NYC Department of Citywide Administrative Services

DRAWING TITLE:
SECOND FLOOR ELECTRICAL LIGHTING DEMOLITION PLAN - EAST

SEAL & SIGNATURE

DATE:	23 JUNE, 2021
PROJECT NO:	E17-0001
DRAWN BY:	
CHECKED BY:	
DRAWING NUMBER:	E-102B.00
CADO FILE No:	



THIRD FLOOR ELECTRICAL LIGHTING DEMOLITION PLAN - WEST 1

SCALE: 1/8"=1'-0"

0 4' 28'

4' 12'

NOTES

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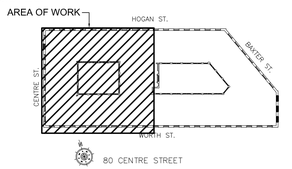


BLOCK: 166 LOT: 27

REVISIONS:

NUMBER	DESCRIPTION	DATE
4.	ISSUED FOR BID	6/23/2021
3.	COMPLIANCE SUBMISSION	3/26/2021
2.	100% CD SUBMISSION	1/26/2021
1.	DOB SUBMISSION	4/17/2020

Department of Design and Construction

DIVISION OF PUBLIC BUILDINGS

CAPITAL PROJECT NUMBER:
E17-0001

PROJECT
Lighting & HVAC Energy Efficiency Upgrades - Louis J. Lefkowitz Building
80 Centre Street, New York, NY, 10013

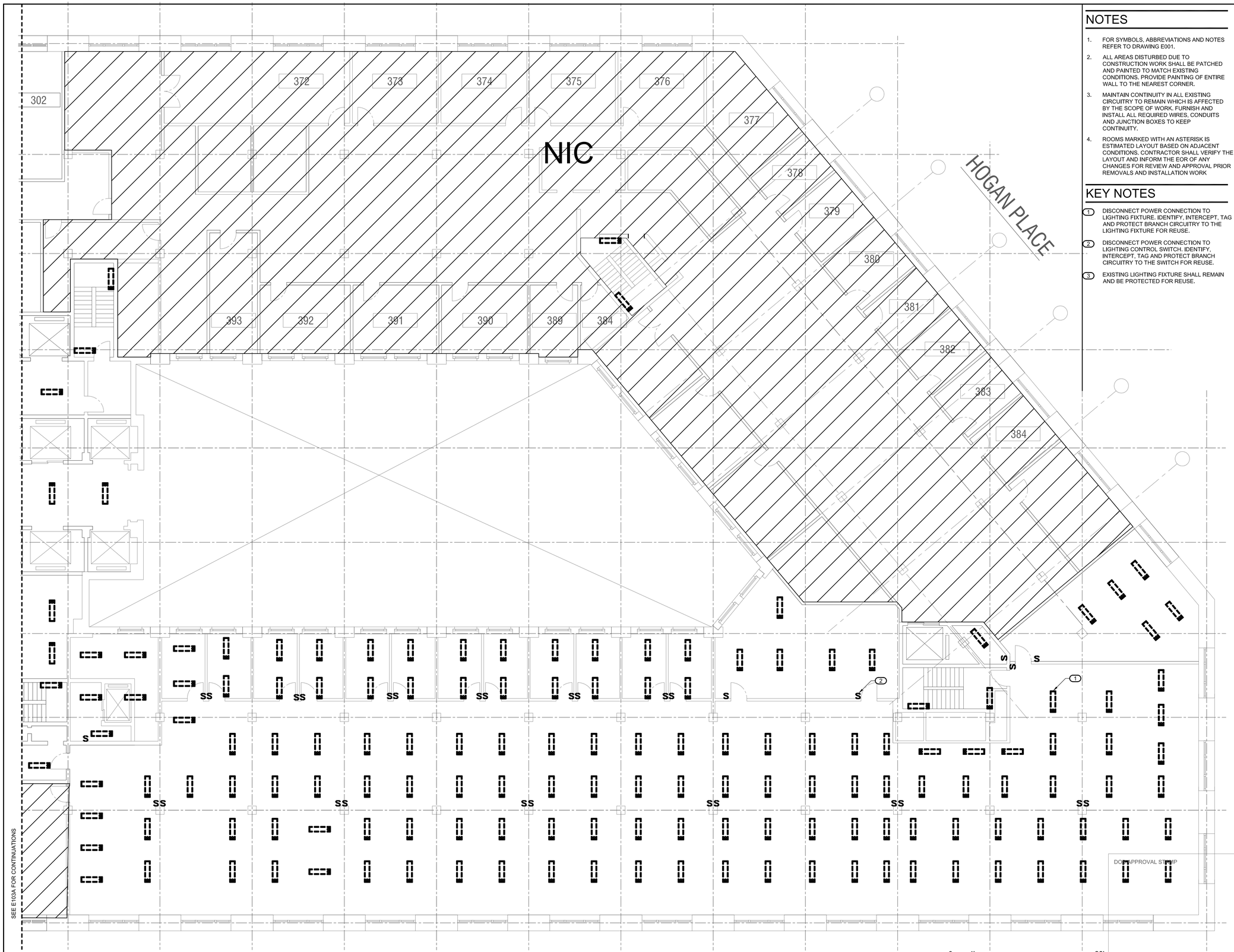
FOR THE: NYC Department of Citywide Administrative Services

DRAWING TITLE:
THIRD FLOOR ELECTRICAL LIGHTING DEMOLITION PLAN - WEST

DOB APPROVAL STAMP

SEAL & SIGNATURE

DATE:	23 JUNE, 2021
PROJECT NO:	E17-0001
DRAWN BY:	
CHECKED BY:	
DRAWING NUMBER:	E-103A.00
CADO FILE No:	34 OF 63



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THIRD FLOOR ELECTRICAL LIGHTING DEMOLITION PLAN - EAST 1

SCALE: 1/8"=1'-0" 0 4' 28' 4' 12'

Lighting & HVAC Energy Efficiency Upgrades - Louis J. Lefkowitz Building

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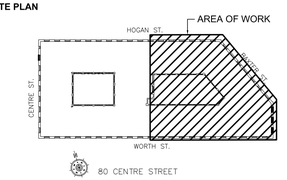


BLOCK: 166 LOT: 27

REVISIONS:

NUMBER	DESCRIPTION	DATE
4.	ISSUED FOR BID	6/23/2021
3.	COMPLIANCE SUBMISSION	3/26/2021
2.	100% CD SUBMISSION	1/26/2021
1.	DOB SUBMISSION	4/17/2020

Department of Design and Construction

DIVISION OF PUBLIC BUILDINGS

CAPITAL PROJECT NUMBER:
E17-0001

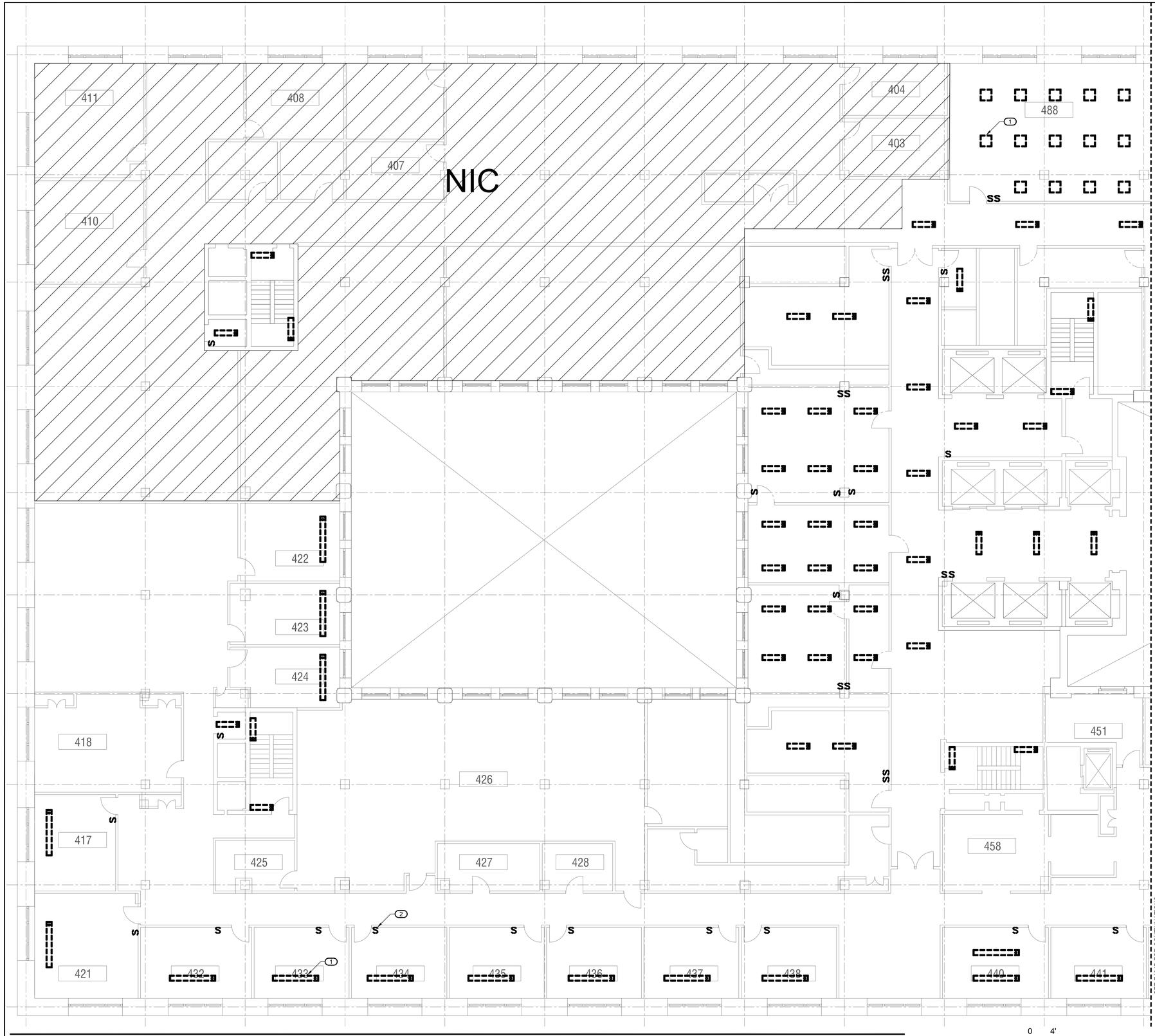
PROJECT
Lighting & HVAC Energy Efficiency Upgrades - Louis J. Lefkowitz Building
80 Centre Street, New York, NY, 10013

FOR THE: NYC Department of Citywide Administrative Services

DRAWING TITLE:
THIRD FLOOR ELECTRICAL LIGHTING DEMOLITION PLAN - EAST

SEAL & SIGNATURE

DATE:	23 JUNE, 2021
PROJECT NO:	E17-0001
DRAWN BY:	
CHECKED BY:	
DRAWING NUMBER:	E-103B.00
CADO FILE No:	



FOURTH FLOOR ELECTRICAL LIGHTING DEMOLITION PLAN - WEST 1

SCALE: 1/8"=1'-0" 0 4' 28' 4' 12'

NOTES

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DOB APPROVAL STAMP

Lighting & HVAC Energy Efficiency Upgrades - Louis J. Lefkowitz Building

MEP Engineers:
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Cost Estimate Consultant:
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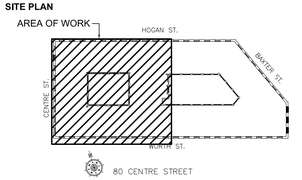
SITE PLAN



BLOCK: 166 LOT: 27

REVISIONS:

NUMBER	DESCRIPTION	DATE
4.	ISSUED FOR BID	6/23/2021
3.	COMPLIANCE SUBMISSION	3/26/2021
2.	100% CD SUBMISSION	1/26/2021
1.	DOB SUBMISSION	4/17/2020

Department of Design and Construction

DIVISION OF PUBLIC BUILDINGS

CAPITAL PROJECT NUMBER:
E17-0001

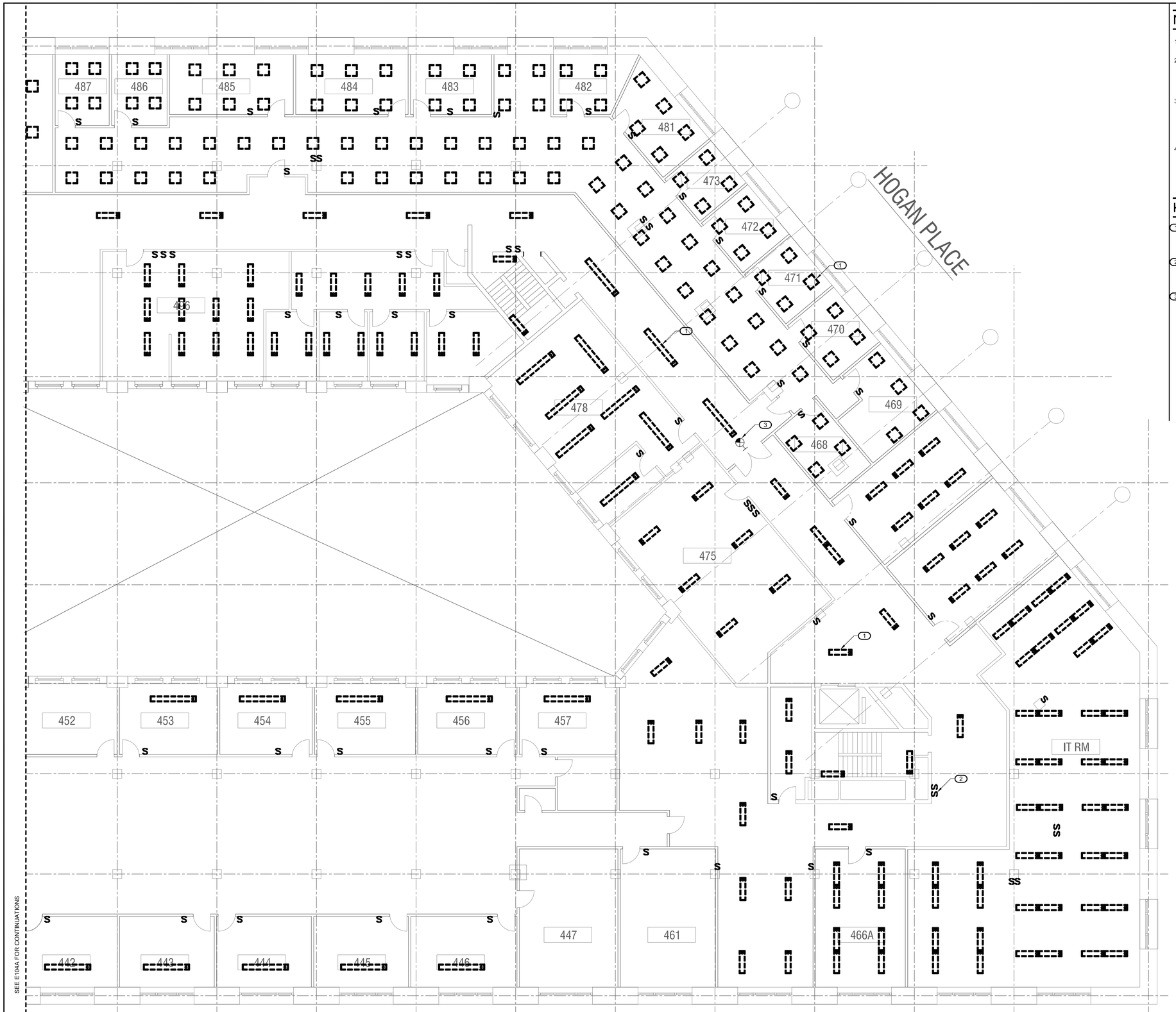
PROJECT
Lighting & HVAC Energy Efficiency Upgrades - Louis J. Lefkowitz Building
80 Centre Street, New York, NY, 10013

FOR THE: NYC Department of Citywide Administrative Services

DRAWING TITLE:
FOURTH FLOOR ELECTRICAL LIGHTING DEMOLITION PLAN - WEST

SEAL & SIGNATURE

DATE: 23 JUNE, 2021
PROJECT NO: E17-0001
DRAWN BY:
CHECKED BY:
DRAWING NUMBER:
E-104A.00
CADO FILE No:
36 OF 63



FOURTH FLOOR ELECTRICAL LIGHTING DEMOLITION PLAN - EAST 1

SCALE: 1/8"=1'-0" 0 4' 28' 4' 12'

NOTES

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DOB APPROVAL STAMP

Lighting & HVAC Energy Efficiency Upgrades - Louis J. Lefkowitz Building

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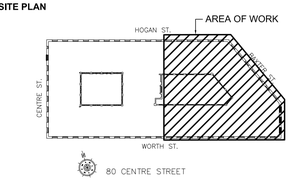

BLOCK: 166 LOT: 27

REVISIONS:

NUMBER	DESCRIPTION	DATE
4.	ISSUED FOR BID	6/23/2021
3.	COMPLIANCE SUBMISSION	3/26/2021
2.	100% CD SUBMISSION	1/26/2021
1.	DOB SUBMISSION	4/17/2020

Department of Design and Construction

DIVISION OF PUBLIC BUILDINGS

CAPITAL PROJECT NUMBER:
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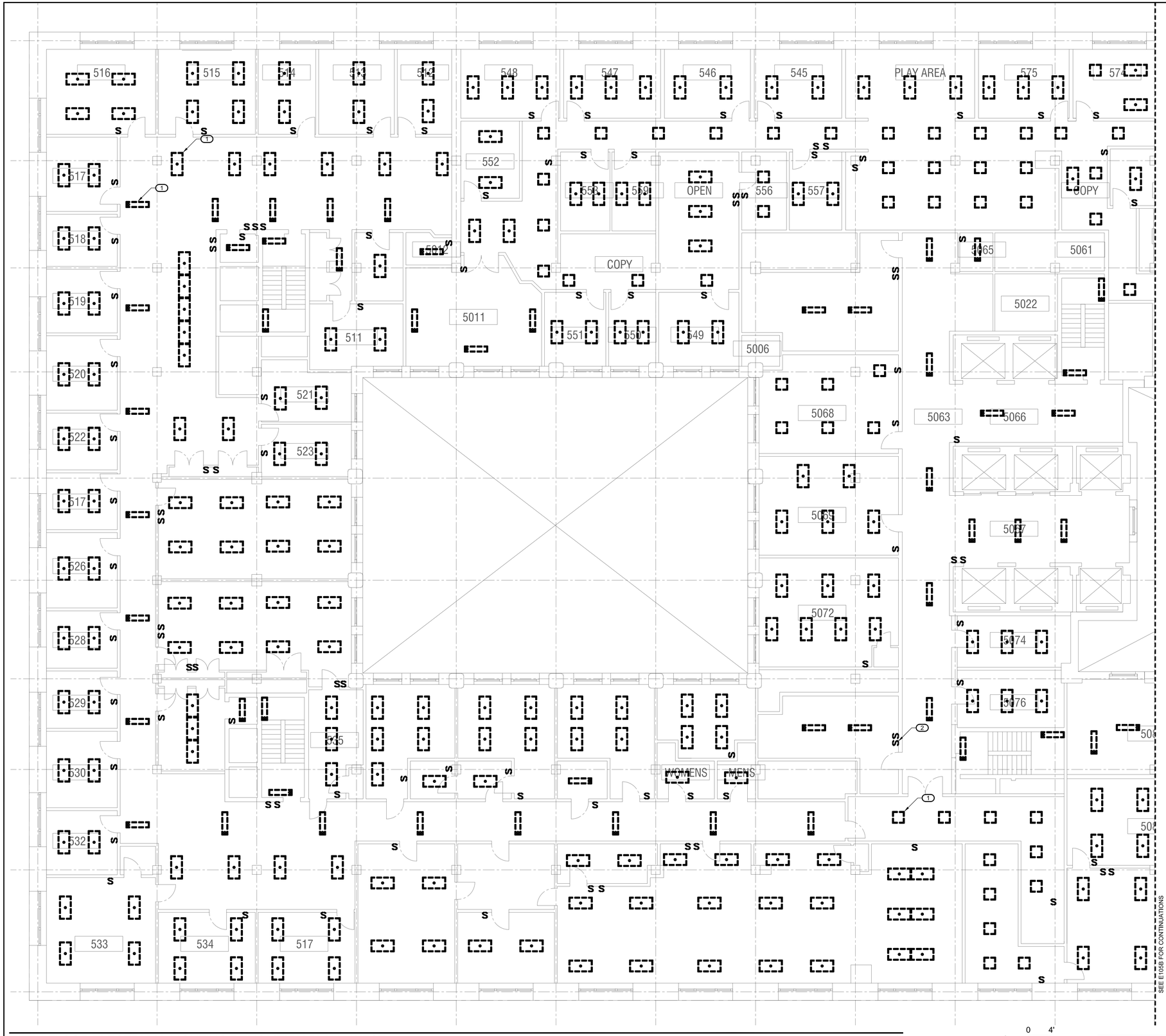
PROJECT
Lighting & HVAC Energy Efficiency Upgrades - Louis J. Lefkowitz Building
80 Centre Street, New York, NY, 10013

FOR THE: NYC Department of Citywide Administrative Services

DRAWING TITLE:
FOURTH FLOOR ELECTRICAL LIGHTING DEMOLITION PLAN - EAST

SEAL & SIGNATURE

DATE: 23 JUNE, 2021
PROJECT NO: E17-0001
DRAWN BY:
CHECKED BY:
DRAWING NUMBER:
E-104B.00
CADO FILE No:
37 OF 63



FIFTH FLOOR ELECTRICAL LIGHTING DEMOLITION PLAN - WEST 1

SCALE: 1/8"=1'-0" 0 4' 12' 28'

NOTES

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DOB APPROVAL STAMP

SEAL & SIGNATURE

Lighting & HVAC Energy Efficiency Upgrades - Louis J. Lefkowitz Building

MEP Engineers:
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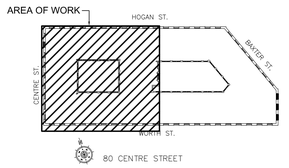

BLOCK: 166 LOT: 27

REVISIONS:

NUMBER	DESCRIPTION	DATE
4.	ISSUED FOR BID	6/23/2021
3.	COMPLIANCE SUBMISSION	3/26/2021
2.	100% CD SUBMISSION	1/26/2021
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Department of Design and Construction

DIVISION OF PUBLIC BUILDINGS

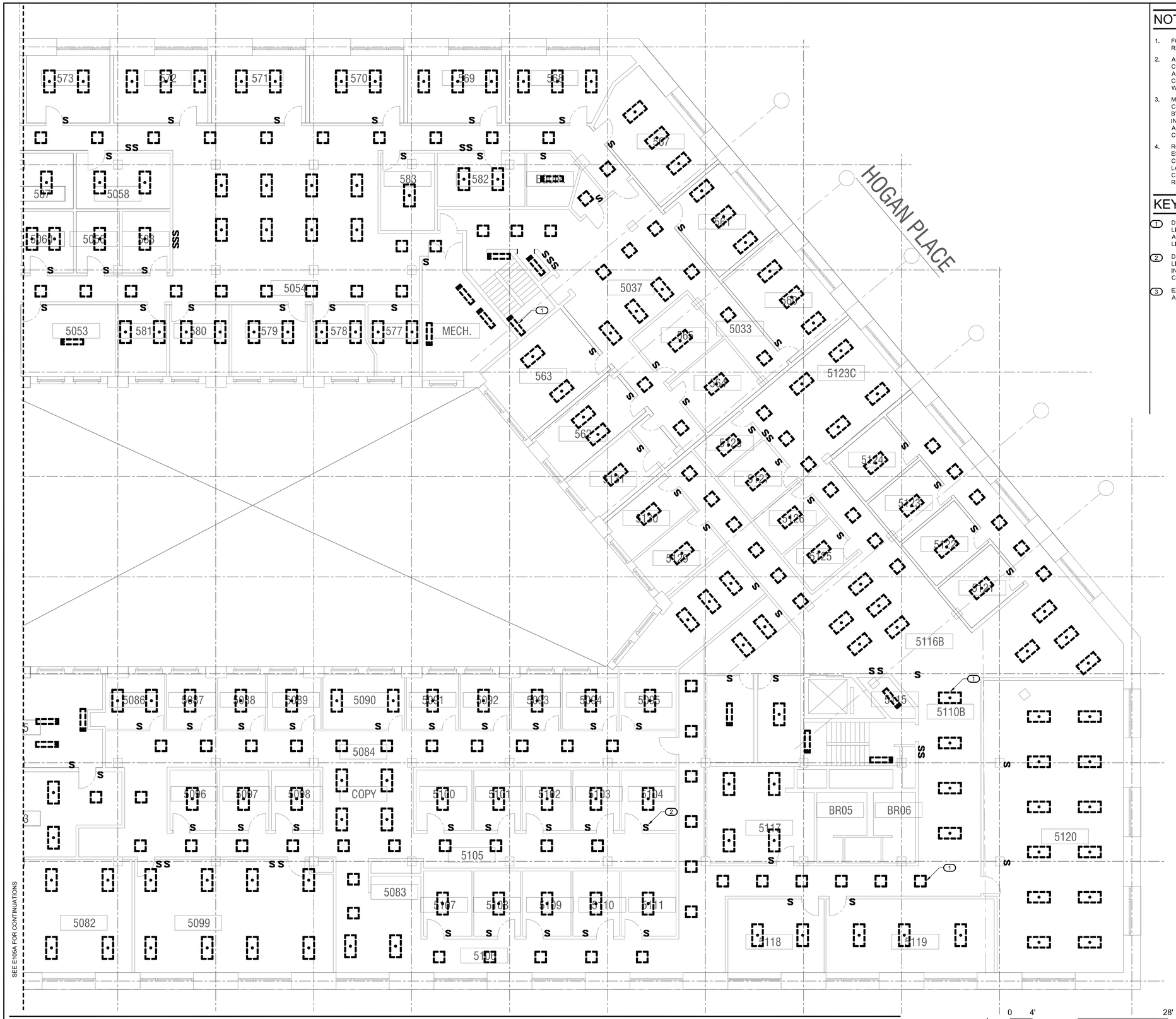
CAPITAL PROJECT NUMBER:
E17-0001

PROJECT
Lighting & HVAC Energy Efficiency Upgrades - Louis J. Lefkowitz Building
80 Centre Street, New York, NY, 10013

FOR THE: NYC Department of Citywide Administrative Services

DRAWING TITLE:
FIFTH FLOOR ELECTRICAL LIGHTING DEMOLITION PLAN - WEST

DATE:	23 JUNE, 2021
PROJECT NO:	E17-0001
DRAWN BY:	
CHECKED BY:	
DRAWING NUMBER:	E-105A.00
CADO FILE No:	



FIFTH FLOOR ELECTRICAL LIGHTING DEMOLITION PLAN - EAST 1

SCALE: 1/8"=1'-0"

0 4' 28'

4' 12'

NOTES

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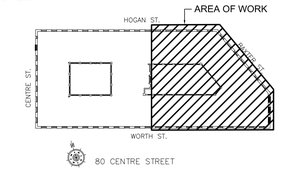
SITE PLAN



BLOCK: 166 LOT: 27

REVISIONS:

NUMBER	DESCRIPTION	DATE
4.	ISSUED FOR BID	6/23/2021
3.	COMPLIANCE SUBMISSION	3/26/2021
2.	100% CD SUBMISSION	1/26/2021
1.	DOB SUBMISSION	4/17/2020

Department of Design and Construction

DIVISION OF PUBLIC BUILDINGS

CAPITAL PROJECT NUMBER:
E17-0001

PROJECT
Lighting & HVAC Energy Efficiency Upgrades - Louis J. Lefkowitz Building
80 Centre Street, New York, NY, 10013

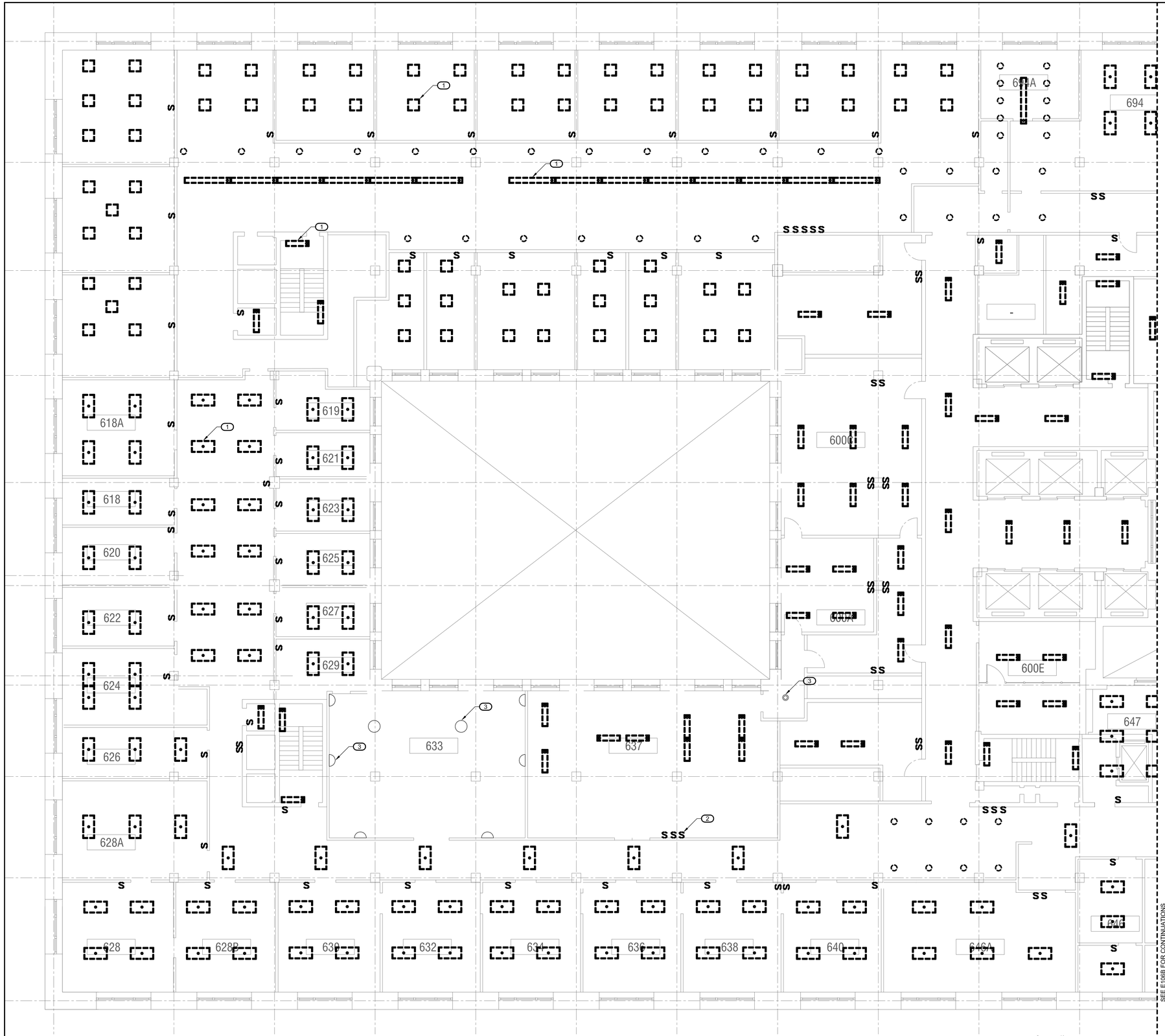
FOR THE: NYC Department of Citywide Administrative Services

DRAWING TITLE:
FIFTH FLOOR ELECTRICAL LIGHTING DEMOLITION PLAN - EAST

DOB APPROVAL STAMP

SEAL & SIGNATURE

DATE: 23 JUNE, 2021
PROJECT NO: E17-0001
DRAWN BY:
CHECKED BY:
DRAWING NUMBER:
E-105B.00
CADO FILE No:
39 OF 63



SIXTH FLOOR ELECTRICAL LIGHTING DEMOLITION PLAN - WEST 1

SCALE: 1/8"=1'-0" 0 4' 12' 28'

NOTES

1. FOR SYMBOLS, ABBREVIATIONS AND NOTES REFER TO DRAWING E001.
2. ALL AREAS DISTURBED DUE TO CONSTRUCTION WORK SHALL BE PATCHED AND PAINTED TO MATCH EXISTING CONDITIONS. PROVIDE PAINTING OF ENTIRE WALL TO THE NEAREST CORNER.
3. MAINTAIN CONTINUITY IN ALL EXISTING CIRCUITRY TO REMAIN WHICH IS AFFECTED BY THE SCOPE OF WORK. FURNISH AND INSTALL ALL REQUIRED WIRES, CONDUITS AND JUNCTION BOXES TO KEEP CONTINUITY.
4. ROOMS MARKED WITH AN ASTERISK IS ESTIMATED LAYOUT BASED ON ADJACENT CONDITIONS. CONTRACTOR SHALL VERIFY THE LAYOUT AND INFORM THE EOR OF ANY CHANGES FOR REVIEW AND APPROVAL PRIOR REMOVALS AND INSTALLATION WORK

KEY NOTES

(1) DISCONNECT POWER CONNECTION TO LIGHTING FIXTURE. IDENTIFY, INTERCEPT, TAG AND PROTECT BRANCH CIRCUITRY TO THE LIGHTING FIXTURE FOR REUSE.

(2) DISCONNECT POWER CONNECTION TO LIGHTING CONTROL SWITCH. IDENTIFY, INTERCEPT, TAG AND PROTECT BRANCH CIRCUITRY TO THE SWITCH FOR REUSE.

(3) EXISTING LIGHTING FIXTURE SHALL REMAIN AND BE PROTECTED FOR REUSE.

Lighting & HVAC Energy Efficiency Upgrades - Louis J. Lefkowitz Building

MEP Engineers:
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Architect
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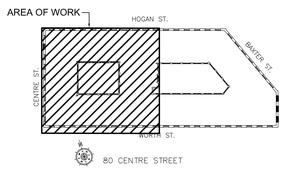
Ste 319 Long Island City, NY
11101 Tel: 212.779.9772

Cost Estimate Consultant:
ELLANA INC.
32 BROADWAY, 8TH
FLOOR NEW YORK, NY
10004 TEL 212 971 0936

SITE PLAN



BLOCK: 166 LOT: 27

REVISIONS:

NUMBER	DESCRIPTION	DATE
4.	ISSUED FOR BID	6/23/2021
3.	COMPLIANCE SUBMISSION	3/26/2021
2.	100% CD SUBMISSION	1/26/2021
1.	DOB SUBMISSION	4/17/2020

Department of Design and Construction

DIVISION OF PUBLIC BUILDINGS

CAPITAL PROJECT NUMBER:
E17-0001

PROJECT
Lighting & HVAC Energy Efficiency Upgrades - Louis J. Lefkowitz Building
80 Centre Street, New York, NY, 10013

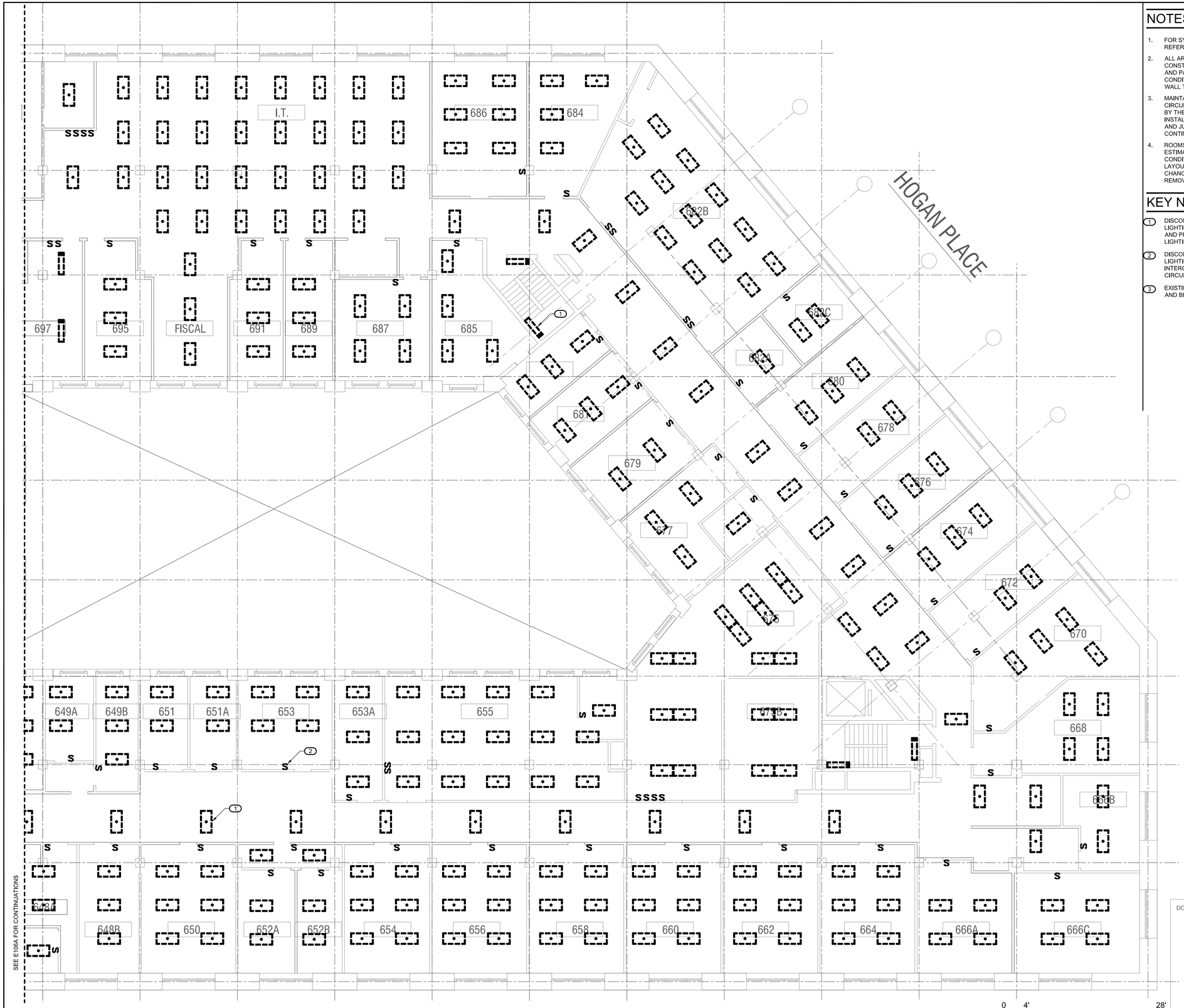
FOR THE: NYC Department of Citywide Administrative Services

DRAWING TITLE:
SIXTH FLOOR ELECTRICAL LIGHTING DEMOLITION PLAN - WEST

DOB APPROVAL STAMP

SEAL & SIGNATURE

DATE: 23 JUNE, 2021
PROJECT NO: E17-0001
DRAWN BY:
CHECKED BY:
DRAWING NUMBER:
E-106A.00
CADO FILE No:



SIXTH FLOOR ELECTRICAL LIGHTING DEMOLITION PLAN - EAST 1

SCALE: 1/8"=1'-0" 0 4' 28' 4' 12'

DOB APPROVAL STAMP

NOTES

1. FOR SYMBOLS, ABBREVIATIONS AND NOTES REFER TO DRAWING E001.
2. ALL AREAS DISTURBED DUE TO CONSTRUCTION WORK SHALL BE PATCHED AND PAINTED TO MATCH EXISTING CONDITIONS. PROVIDE PAINTING OF ENTIRE WALL TO THE NEAREST CORNER.
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KEY NOTES

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(2) DISCONNECT POWER CONNECTION TO LIGHTING CONTROL SWITCH. IDENTIFY, INTERCEPT, TAG AND PROTECT BRANCH CIRCUITRY TO THE SWITCH FOR REUSE.

(3) EXISTING LIGHTING FIXTURE SHALL REMAIN AND BE PROTECTED FOR REUSE.

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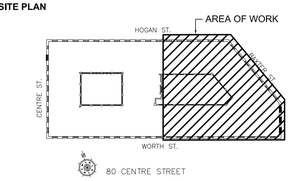
SITE PLAN



BLOCK: 166 LOT: 27

REVISIONS:

NUMBER	DESCRIPTION	DATE
4.	ISSUED FOR BID	6/23/2021
3.	COMPLIANCE SUBMISSION	3/26/2021
2.	100% CD SUBMISSION	1/26/2021
1.	DOB SUBMISSION	4/17/2020

Department of Design and Construction

DIVISION OF PUBLIC BUILDINGS

CAPITAL PROJECT NUMBER:
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PROJECT
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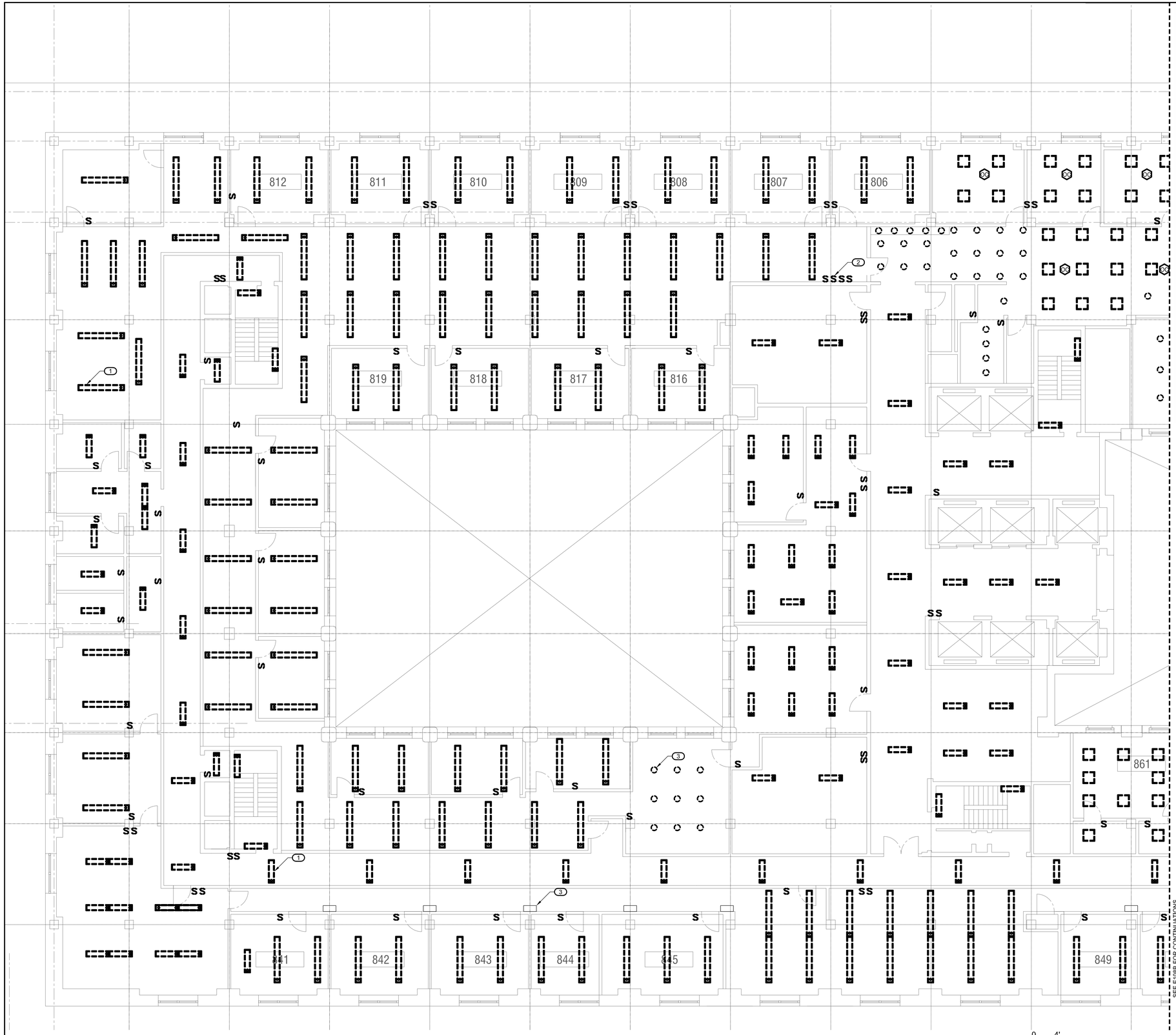
80 Centre Street, New York, NY, 10013

FOR THE: NYC Department of Citywide Administrative Services

DRAWING TITLE:
SIXTH FLOOR ELECTRICAL LIGHTING DEMOLITION PLAN - EAST

SEAL & SIGNATURE

DATE:	23 JUNE, 2021
PROJECT NO:	E17-0001
DRAWN BY:	
CHECKED BY:	
DRAWING NUMBER:	E-106B.00
CADO FILE No:	



EIGHTH FLOOR ELECTRICAL LIGHTING DEMOLITION PLAN - WEST 1

SCALE: 1/8"=1'-0"

0 4' 28'

4' 12'

NOTES

1. FOR SYMBOLS, ABBREVIATIONS AND NOTES REFER TO DRAWING E001.
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KEY NOTES

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2. DISCONNECT POWER CONNECTION TO LIGHTING CONTROL SWITCH. IDENTIFY, INTERCEPT, TAG AND PROTECT BRANCH CIRCUITRY TO THE SWITCH FOR REUSE.
3. EXISTING LIGHTING FIXTURE SHALL REMAIN AND BE PROTECTED FOR REUSE.

DOB APPROVAL STAMP

SEAL & SIGNATURE

Lighting & HVAC Energy Efficiency Upgrades - Louis J. Lefkowitz Building

MEP Engineers:
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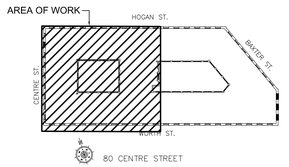
SITE PLAN



BLOCK: 166 LOT: 27

REVISIONS:

NUMBER	DESCRIPTION	DATE
4.	ISSUED FOR BID	6/23/2021
3.	COMPLIANCE SUBMISSION	3/26/2021
2.	100% CD SUBMISSION	1/26/2021
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Department of Design and Construction

DIVISION OF PUBLIC BUILDINGS

CAPITAL PROJECT NUMBER:
E17-0001

PROJECT
Lighting & HVAC Energy Efficiency Upgrades - Louis J. Lefkowitz Building
80 Centre Street, New York, NY, 10013

FOR THE: NYC Department of Citywide Administrative Services

DRAWING TITLE:
EIGHTH FLOOR ELECTRICAL LIGHTING DEMOLITION PLAN - WEST

DATE: 23 JUNE, 2021
PROJECT NO: E17-0001
DRAWN BY:
CHECKED BY:
DRAWING NUMBER:
E-107A.00
CADO FILE No:
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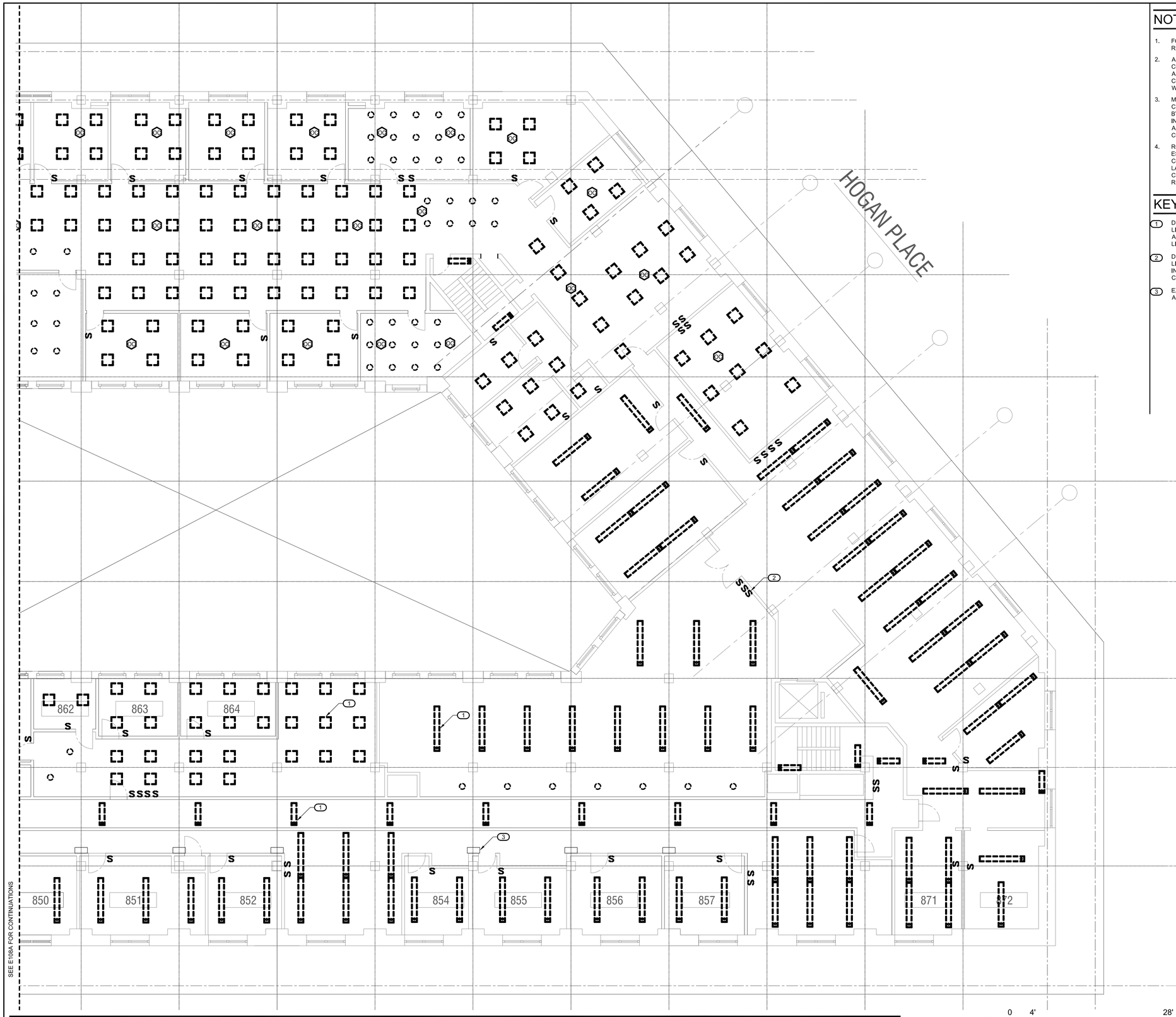

EIGHTH FLOOR ELECTRICAL LIGHTING DEMOLITION PLAN - EAST 1

SCALE: 1/8"=1'-0" 0 4' 28' 4' 12'

NOTES

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(3) EXISTING LIGHTING FIXTURE SHALL REMAIN AND BE PROTECTED FOR REUSE.

DOB APPROVAL STAMP

Lighting & HVAC Energy Efficiency Upgrades - Louis J. Lefkowitz Building

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Cost Estimate Consultant:
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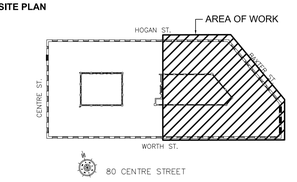
SITE PLAN



BLOCK: 166 LOT: 27

REVISIONS:

NUMBER	DESCRIPTION	DATE
4.	ISSUED FOR BID	6/23/2021
3.	COMPLIANCE SUBMISSION	3/26/2021
2.	100% CD SUBMISSION	1/26/2021
1.	DOB SUBMISSION	4/17/2020

Department of Design and Construction

DIVISION OF PUBLIC BUILDINGS

CAPITAL PROJECT NUMBER:
E17-0001

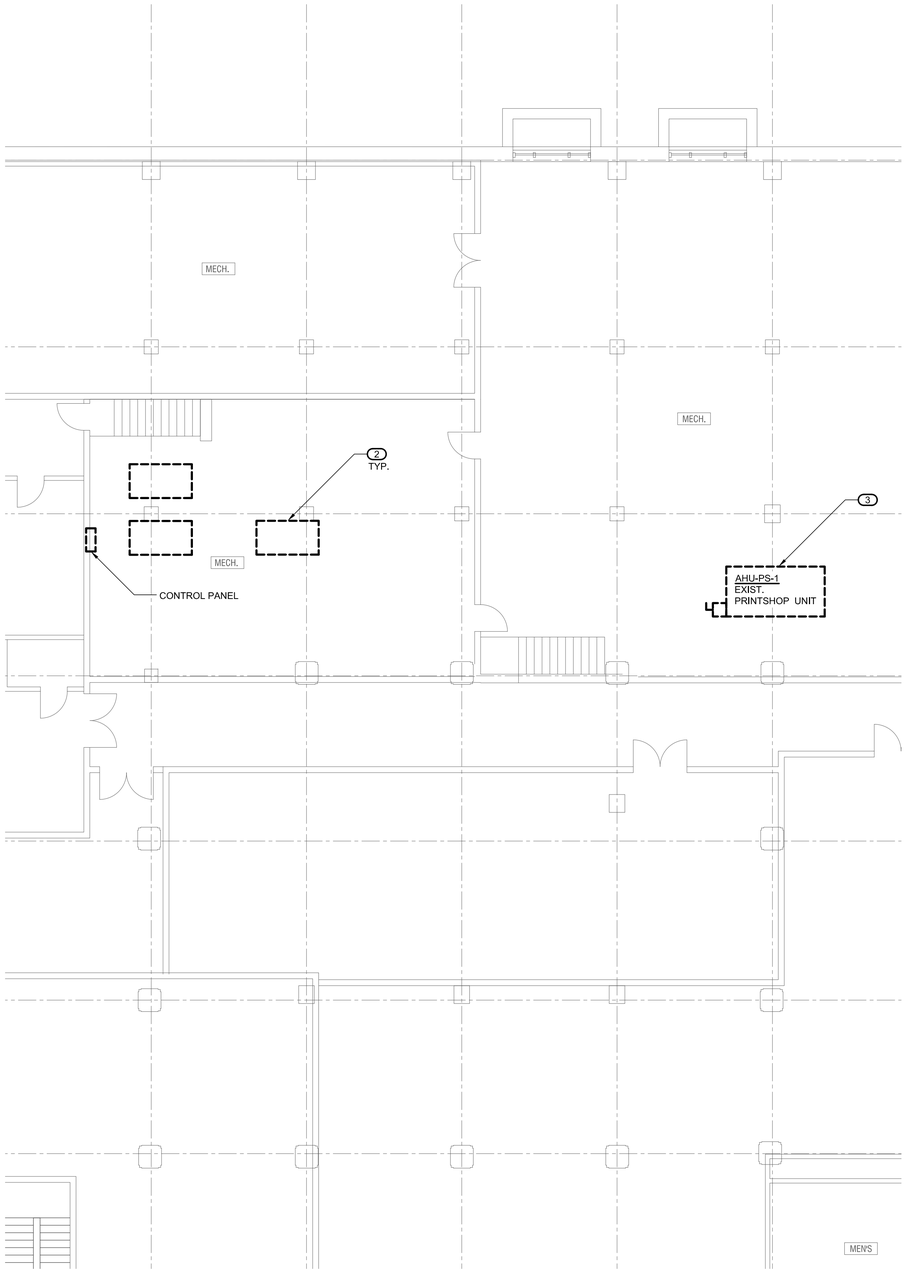
PROJECT
Lighting & HVAC Energy Efficiency Upgrades - Louis J. Lefkowitz Building
80 Centre Street, New York, NY, 10013

FOR THE: NYC Department of Citywide Administrative Services

DRAWING TITLE:
EIGHTH FLOOR ELECTRICAL LIGHTING DEMOLITION PLAN - EAST

SEAL & SIGNATURE

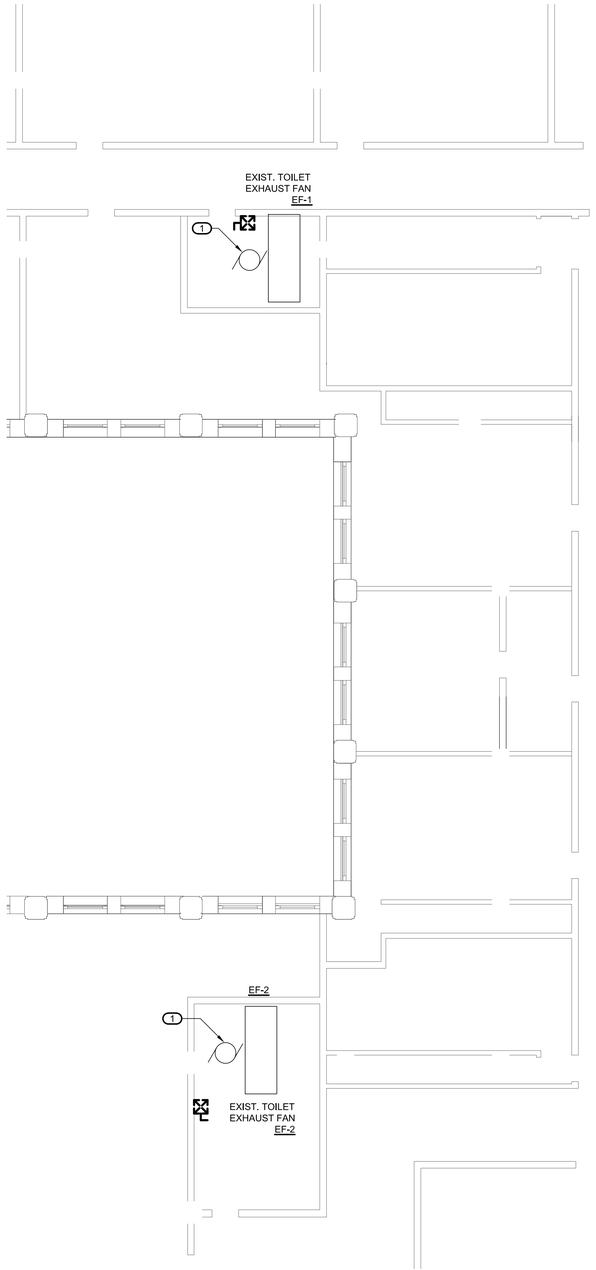
DATE: 23 JUNE, 2021
PROJECT NO: E17-0001
DRAWN BY:
CHECKED BY:
DRAWING NUMBER:
E-107B.00
CADO FILE No:
43 OF 63



BASEMENT DEMOLITION PART PLAN 1

SCALE: 1/8"=1'-0"

0 4' 28'
4' 12'



NINTH FLOOR DEMOLITION PART PLAN 2

SCALE: 1/8"=1'-0"

0 4' 28'
4' 12'

GENERAL NOTES

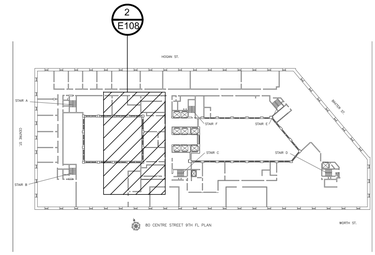
1. REFER TO E001 FOR SYMBOLS, NOTES AND ABBREVIATIONS.
2. FOR EXACT LOCATIONS OF HVAC EQUIPMENT AND WORK RELATED TO THE HVAC EQUIPMENT, REFER TO HVAC DRAWINGS

KEY NOTES

(1) DISCONNECT POWER CONNECTION TO EXISTING FAN. REMOVE EXISTING STARTER. IDENTIFY, TAG , AND PROTECT THE BRANCH CIRCUITRY TO THE FAN FOR REUSE.

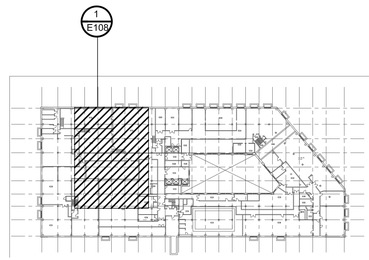
(2) DISCONNECT POWER CONNECTION TO HOUSE PUMP. REMOVE EXISTING STARTER. IDENTIFY, TAG , AND PROTECT THE BRANCH CIRCUITRY TO THE PUMP FOR REUSE.

(3) DISCONNECT POWER CONNECTION TO AIR HANDLING UNIT. IDENTIFY, TAG , AND PROTECT THE BRANCH CIRCUITRY TO THE AHU FOR REUSE.



NINTH FLOOR KEY PLAN 3

NOT TO SCALE



BASEMENT KEY PLAN 4

NOT TO SCALE

Lighting & HVAC Energy Efficiency Upgrades - Louis J. Lefkowitz Building

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Architect
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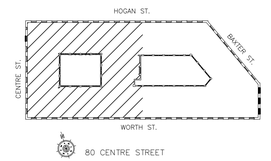
11101 Tel: 212.779.9772

Cost Estimate Consultant:
ELLANA INC.
32 BROADWAY, 8TH
FLOOR NEW YORK, NY
10004 TEL 212 971 0936

SITE PLAN



BLOCK: 166 LOT: 27

REVISIONS:

NUMBER	DESCRIPTION	DATE
4.	ISSUED FOR BID	6/23/2021
3.	COMPLIANCE SUBMISSION	3/26/2021
2.	100% CD SUBMISSION	1/26/2021
1.	DOB SUBMISSION	4/17/2020

Department of Design and Construction

DIVISION OF PUBLIC BUILDINGS

CAPITAL PROJECT NUMBER:
E17-0001

PROJECT
Lighting & HVAC Energy Efficiency Upgrades - Louis J. Lefkowitz Building
80 Centre Street, New York, NY, 10013

FOR THE: NYC Department of Citywide Administrative Services

DRAWING TITLE:

ELECTRICAL DEMOLITION PART PLANS -BASEMENT AND NINTH FLOOR

DOB APPROVAL STAMP

SEAL & SIGNATURE

DATE: 23 JUNE, 2021
PROJECT NO: E17-0001
DRAWN BY:
CHECKED BY:
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E-108.00
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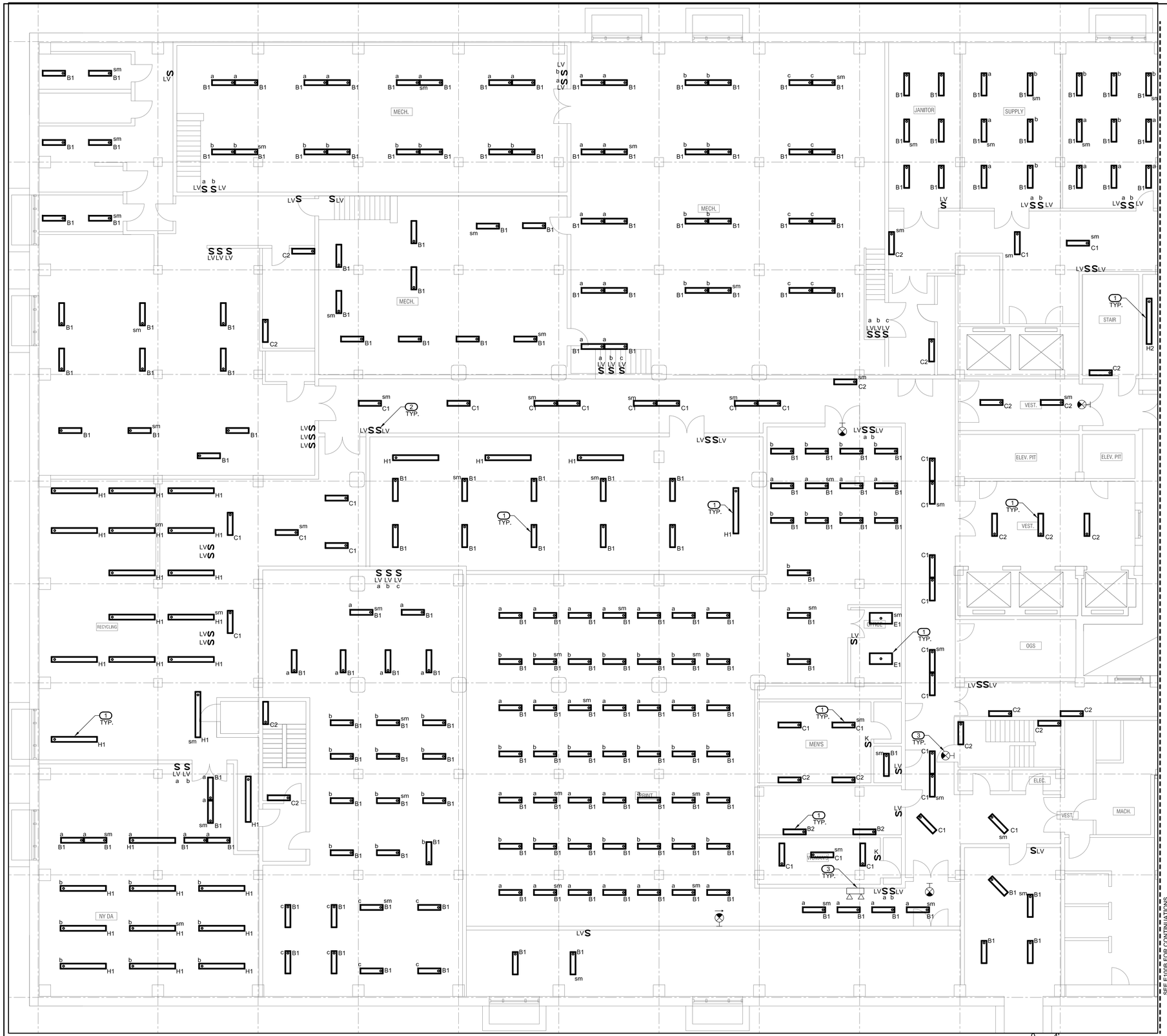

BASEMENT FLOOR ELECTRICAL LIGHTING PLAN - WEST 1

SCALE: 1/8"=1'-0" 0 4' 28' 4' 12'

NOTES

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4. REFER TO DRAWING E001 FOR LIGHTING FIXTURE SCHEDULE.
5. ROOMS MARKED WITH AN ASTERISK IS ESTIMATED LAYOUT BASED ON ADJACENT CONDITIONS. CONTRACTOR SHALL VERIFY THE LAYOUT AND INFORM THE EOR OF ANY CHANGES FOR REVIEW AND APPROVAL PRIOR REMOVALS AND INSTALLATION WORK
6. REFER TO DRAWINGS E701 AND E702 FOR DETAILS.
7. FURNISH AND INSTALL SMART MULTISENSOR WITH WIRELESS COMMUNICATION MODULE FOR LIGHTING FIXTURES MARKED WITH SUBSCRIPT 'sm'. PROVIDE WIRELESS COMMUNICATION MODULES FOR ALL OTHER LIGHTING FIXTURES.
8. LIGHTING CONTROL SCHEME IN THE SPACE SHALL MATCH EXISTING. EACH LIGHTING CONTROL SWITCH SHALL CONTROL THE SAME EXISTING AREA THAT IT WAS CONTROLLING PRIOR TO THE REPLACEMENT. FOR SPACES WITH MULTIPLE LIGHTING CONTROLS, CONTRACTOR SHALL COORDINATE LIGHTING FIXTURE CONTROL IN THE SPACE WITH BUILDING PERSONNEL AND OBTAIN THEIR APPROVAL PRIOR TO PROGRAMMING THE LIGHTING FIXTURE CONTROLS..
9. FOR SPACES WITH MULTIPLE LIGHTING ZONES, EACH ZONE SHALL BE PROVIDED WITH AT LEAST ONE SENSOR MODULE TO CONTROL THE FIXTURES IN THAT ZONE
10. FOR OPEN-PLAN OFFICES, NO MORE THAN 50% OF THE LIGHTING MAY TURN ON AUTOMATICALLY. ALL THE REMAINING LIGHTING FIXTURES SHALL BE MANUAL ON.

KEY NOTES

1. PROVIDE LIGHTING FIXTURE PER LIGHTING FIXTURE SCHEDULE. RECONNECT TO BRACH CIRCUITRY IDENTIFIED AND PROTECTED DURING DEMOLITION.EXTEND BRANCH CIRCUITRY AS REQUIRED TO MAKE THE FINAL CONNECTION. PROGRAM THE LIGHTING FIXTURES TO BE CONTROLLED BASED ON THE INPUT OF THE SMART MULTISENSOR AND THE WIRELESS LIGHTING SWITCH IN THE ROOM.
2. PROVIDE WIRELESS LIGHTING CONTROL SWITCH. RECONNECT TO THE BRANCH CIRCUITRY IDENTIFIED AND PROTECTED DURING DEMOLITION. PROGRAM THE SWITCH TO CONTROL ALL LIGHTING FIXTURES INDICATED IN THE ROOM.
3. EXISTING LIGHTING FIXTURE SHALL REMAIN AND BE PROTECTED FOR REUSE.

DOB APPROVAL STAMP

SEAL & SIGNATURE

Lighting & HVAC Energy Efficiency Upgrades - Louis J. Lefkowitz Building

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Cost Estimate Consultant:
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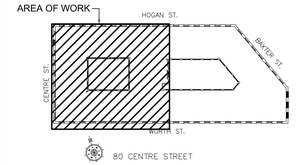
SITE PLAN



BLOCK: 166 LOT: 27

REVISIONS:

NUMBER	DESCRIPTION	DATE
4.	ISSUED FOR BID	6/23/2021
3.	COMPLIANCE SUBMISSION	3/26/2021
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Department of Design and Construction

DIVISION OF PUBLIC BUILDINGS

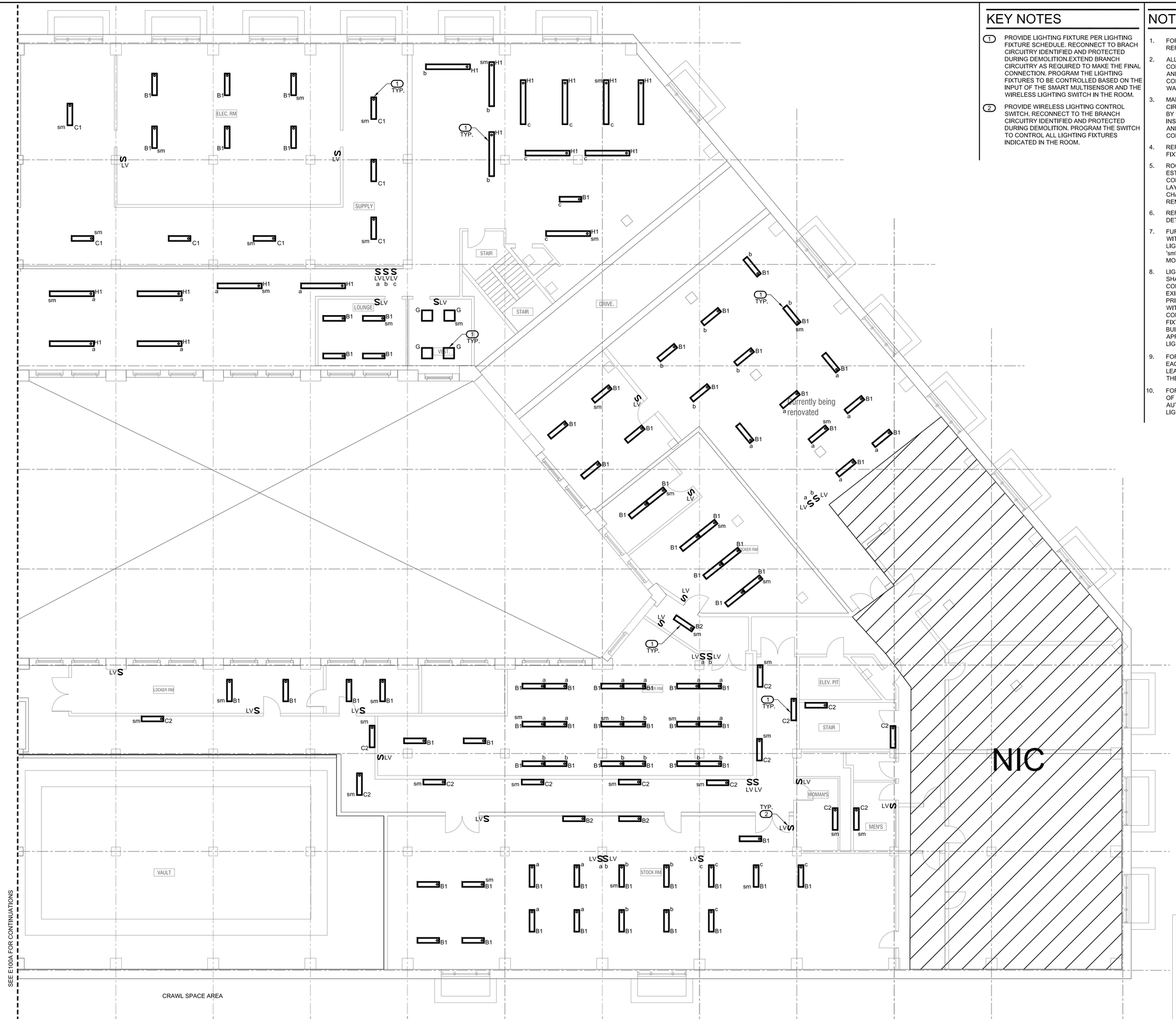
CAPITAL PROJECT NUMBER:
E17-0001

PROJECT
Lighting & HVAC Energy Efficiency Upgrades - Louis J. Lefkowitz Building
80 Centre Street, New York, NY, 10013

FOR THE: NYC Department of Citywide Administrative Services

DRAWING TITLE:
BASEMENT FLOOR ELECTRICAL LIGHTING PLAN - WEST

DATE:	23 JUNE, 2021
PROJECT NO:	E17-0001
DRAWN BY:	
CHECKED BY:	
DRAWING NUMBER:	E-200A.00
CADO FILE No:	



BASEMENT FLOOR ELECTRICAL LIGHTING PLAN - WEST 1

SCALE: 1/8"=1'-0" 0 4' 12' 28'

DOB APPROVAL STAMP

KEY NOTES

(1) PROVIDE LIGHTING FIXTURE PER LIGHTING FIXTURE SCHEDULE. RECONNECT TO BRACH CIRCUITRY IDENTIFIED AND PROTECTED DURING DEMOLITION.EXTEND BRANCH CIRCUITRY AS REQUIRED TO MAKE THE FINAL CONNECTION. PROGRAM THE LIGHTING FIXTURES TO BE CONTROLLED BASED ON THE INPUT OF THE SMART MULTISENSOR AND THE WIRELESS LIGHTING SWITCH IN THE ROOM.

(2) PROVIDE WIRELESS LIGHTING CONTROL SWITCH. RECONNECT TO THE BRANCH CIRCUITRY IDENTIFIED AND PROTECTED DURING DEMOLITION. PROGRAM THE SWITCH TO CONTROL ALL LIGHTING FIXTURES INDICATED IN THE ROOM.

NOTES

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3. MAINTAIN CONTINUITY IN ALL EXISTING CIRCUITRY TO REMAIN WHICH IS AFFECTED BY THE SCOPE OF WORK. FURNISH AND INSTALL ALL REQUIRED WIRES, CONDUITS AND JUNCTION BOXES TO KEEP CONTINUITY.
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9. FOR SPACES WITH MULTIPLE LIGHTING ZONES, EACH ZONE SHALL BE PROVIDED WITH AT LEAST ONE SENSOR MODULE TO CONTROL THE FIXTURES IN THAT ZONE
10. FOR OPEN-PLAN OFFICES, NO MORE THAN 50% OF THE LIGHTING MAY TURN ON AUTOMATICALLY. ALL THE REMAINING LIGHTING FIXTURES SHALL BE MANUAL ON.

Lighting & HVAC Energy Efficiency Upgrades - Louis J. Lefkowitz Building

MEP Engineers:
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11101 Tel: 212.779.9772

Cost Estimate Consultant:
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FLOOR NEW YORK, NY
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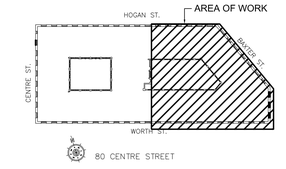
SITE PLAN



BLOCK: 166 LOT: 27

REVISIONS:

NUMBER	DESCRIPTION	DATE
4.	ISSUED FOR BID	6/23/2021
3.	COMPLIANCE SUBMISSION	3/26/2021
2.	100% CD SUBMISSION	1/26/2021
1.	DOB SUBMISSION	4/17/2020

Department of Design and Construction

DIVISION OF PUBLIC BUILDINGS

CAPITAL PROJECT NUMBER:
E17-0001

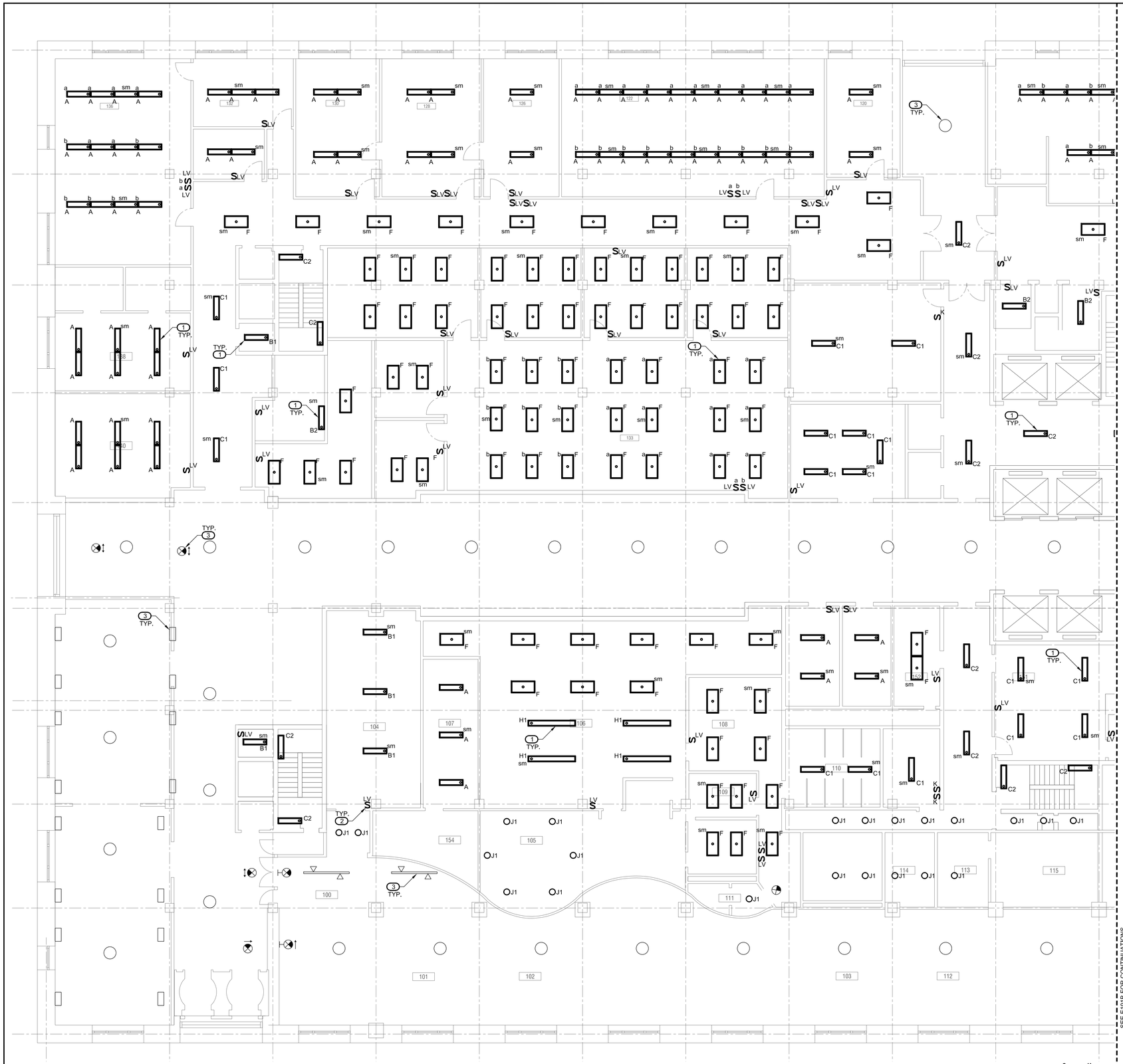
PROJECT
Lighting & HVAC Energy Efficiency Upgrades - Louis J. Lefkowitz Building
80 Centre Street, New York, NY, 10013

FOR THE: NYC Department of Citywide Administrative Services

DRAWING TITLE:
BASEMENT FLOOR ELECTRICAL LIGHTING PLAN - EAST

SEAL & SIGNATURE

DATE: 23 JUNE, 2021
PROJECT NO: E17-0001
DRAWN BY:
CHECKED BY:
DRAWING NUMBER:
E-200B.00
CADO FILE No:
46 OF 63



FIRST FLOOR ELECTRICAL LIGHTING PLAN - WEST 1

NOTES

1. FOR SYMBOLS, ABBREVIATIONS AND NOTES REFER TO DRAWING E001.
2. ALL AREAS DISTURBED DUE TO CONSTRUCTION WORK SHALL BE PATCHED AND PAINTED TO MATCH EXISTING CONDITIONS. PROVIDE PAINTING OF ENTIRE WALL TO THE NEAREST CORNER.
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4. REFER TO DRAWING E001 FOR LIGHTING FIXTURE SCHEDULE.
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10. FOR OPEN-PLAN OFFICES, NO MORE THAN 50% OF THE LIGHTING MAY TURN ON AUTOMATICALLY. ALL THE REMAINING LIGHTING FIXTURES SHALL BE MANUAL ON.

KEY NOTES

(1) PROVIDE LIGHTING FIXTURE PER LIGHTING FIXTURE SCHEDULE. RECONNECT TO BRACH CIRCUITRY IDENTIFIED AND PROTECTED DURING DEMOLITION.EXTEND BRANCH CIRCUITRY AS REQUIRED TO MAKE THE FINAL CONNECTION. PROGRAM THE LIGHTING FIXTURES TO BE CONTROLLED BASED ON THE INPUT OF THE SMART MULTISENSOR AND THE WIRELESS LIGHTING SWITCH IN THE ROOM.

(2) PROVIDE WIRELESS LIGHTING CONTROL SWITCH. RECONNECT TO THE BRANCH CIRCUITRY IDENTIFIED AND PROTECTED DURING DEMOLITION. PROGRAM THE SWITCH TO CONTROL ALL LIGHTING FIXTURES INDICATED IN THE ROOM.

(3) EXISTING LIGHTING FIXTURE SHALL REMAIN AND BE PROTECTED FOR REUSE.

Lighting & HVAC Energy Efficiency Upgrades - Louis J. Lefkowitz Building

MEP Engineers:
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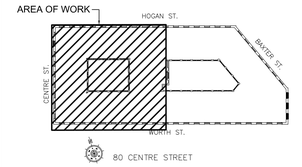
SITE PLAN



BLOCK: 166 LOT: 27

REVISIONS:

NUMBER	DESCRIPTION	DATE
4.	ISSUED FOR BID	6/23/2021
3.	COMPLIANCE SUBMISSION	3/26/2021
2.	100% CD SUBMISSION	1/26/2021
1.	DOB SUBMISSION	4/17/2020

Department of Design and Construction

DIVISION OF PUBLIC BUILDINGS

CAPITAL PROJECT NUMBER:
E17-0001

PROJECT
Lighting & HVAC Energy Efficiency Upgrades - Louis J. Lefkowitz Building
80 Centre Street, New York, NY, 10013

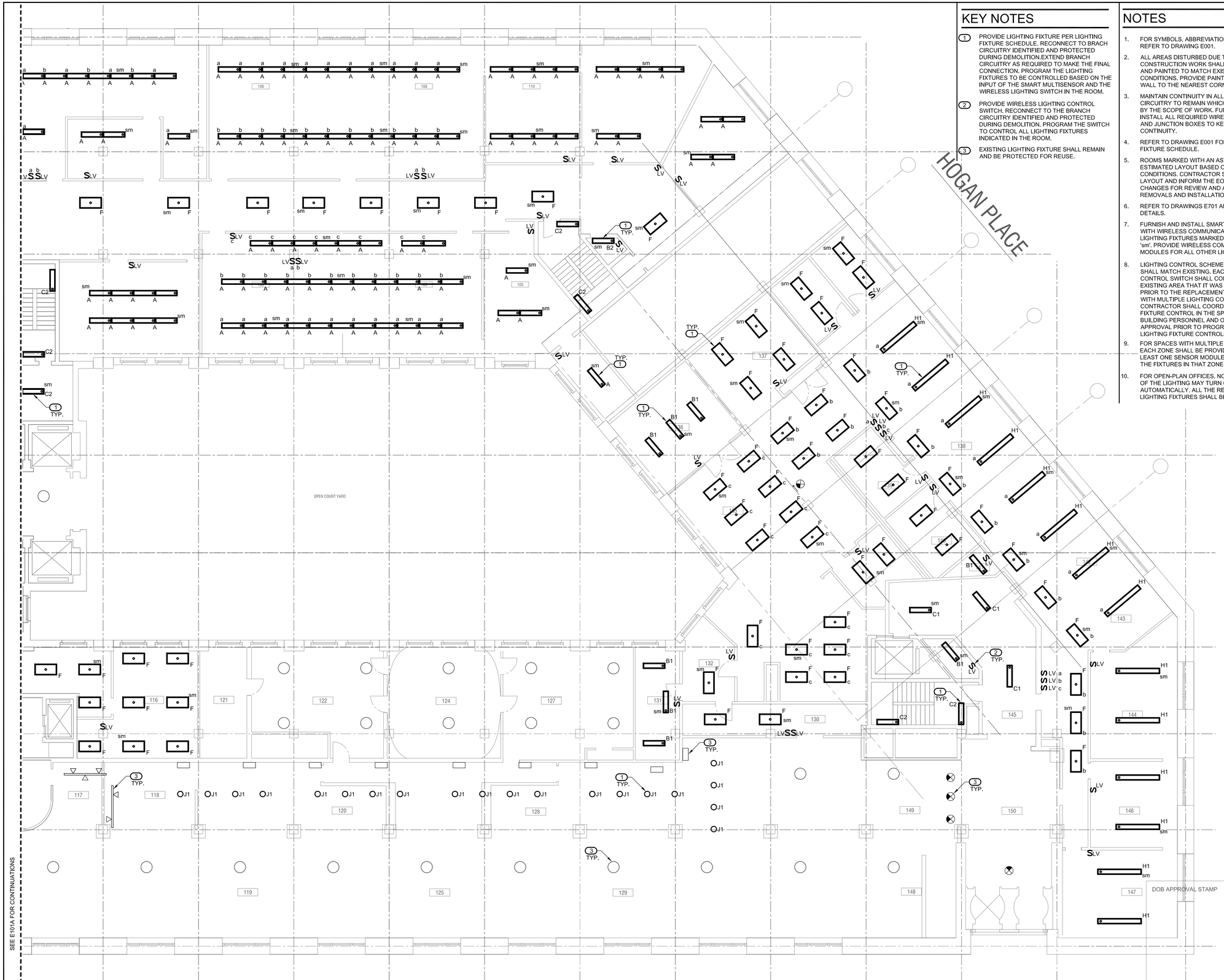
FOR THE: NYC Department of Citywide Administrative Services

DRAWING TITLE:
FIRST FLOOR ELECTRICAL LIGHTING PLAN - WEST

DOB APPROVAL STAMP

SEAL & SIGNATURE

DATE: 23 JUNE, 2021
PROJECT NO: E17-0001
DRAWN BY:
CHECKED BY:
DRAWING NUMBER:
E-201A.00
CADO FILE No:



FIRST FLOOR ELECTRICAL LIGHTING PLAN - EAST 1

SCALE: 1/8"=1'-0" 0 4' 28' 4' 12'

KEY NOTES

1. PROVIDE LIGHTING FIXTURE PER LIGHTING FIXTURE SCHEDULE. RECONNECT TO BRACH CIRCUITRY IDENTIFIED AND PROTECTED DURING DEMOLITION.EXTEND BRANCH CIRCUITRY AS REQUIRED TO MAKE THE FINAL CONNECTION. PROGRAM THE LIGHTING FIXTURES TO BE CONTROLLED BASED ON THE INPUT OF THE SMART MULTISENSOR AND THE WIRELESS LIGHTING SWITCH IN THE ROOM.
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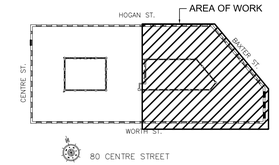
SITE PLAN



BLOCK: 166 LOT: 27

REVISIONS:

NUMBER	DESCRIPTION	DATE
4.	ISSUED FOR BID	6/23/2021
3.	COMPLIANCE SUBMISSION	3/26/2021
2.	100% CD SUBMISSION	1/26/2021
1.	DOB SUBMISSION	4/17/2020

Department of Design and Construction

DIVISION OF PUBLIC BUILDINGS

CAPITAL PROJECT NUMBER:
E17-0001

PROJECT
Lighting & HVAC Energy Efficiency Upgrades - Louis J. Lefkowitz Building
80 Centre Street, New York, NY, 10013

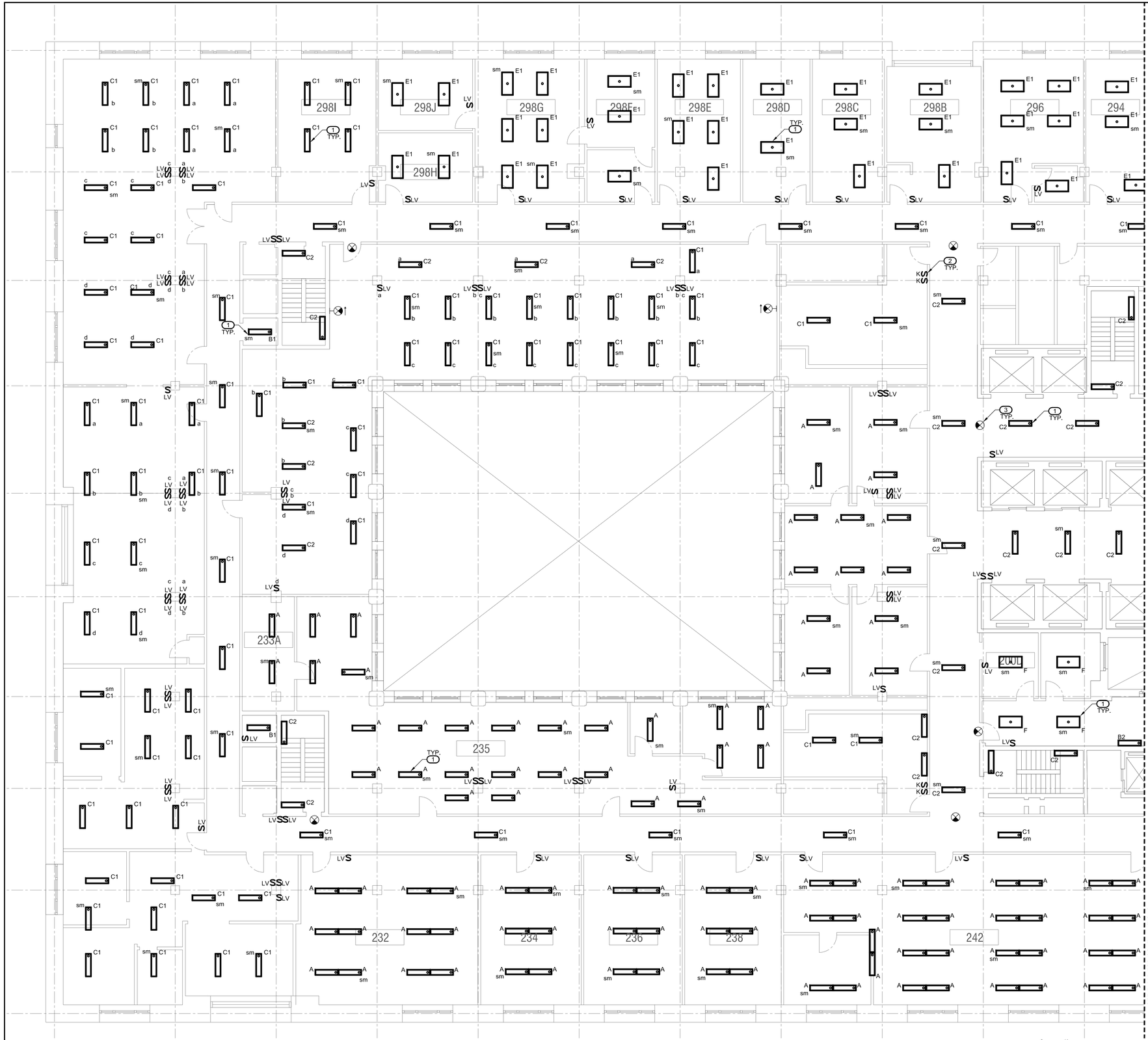
FOR THE: NYC Department of Citywide Administrative Services

DRAWING TITLE:
FIRST FLOOR ELECTRICAL LIGHTING PLAN - EAST

DOB APPROVAL STAMP

SEAL & SIGNATURE

DATE: 23 JUNE, 2021
PROJECT NO: E17-0001
DRAWN BY:
CHECKED BY:
DRAWING NUMBER:
E-201B.00
CADO FILE No:
48 OF 63



SECOND FLOOR ELECTRICAL LIGHTING PLAN - WEST 1

SCALE: 1/8"=1'-0" 0 4' 28' 4' 12'

NOTES

1. FOR SYMBOLS, ABBREVIATIONS AND NOTES REFER TO DRAWING E001.
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KEY NOTES

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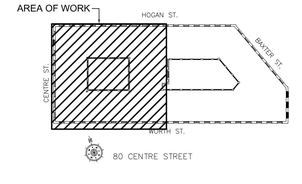
SITE PLAN



BLOCK: 166 LOT: 27

REVISIONS:

NUMBER	DESCRIPTION	DATE
4.	ISSUED FOR BID	6/23/2021
3.	COMPLIANCE SUBMISSION	3/26/2021
2.	100% CD SUBMISSION	1/26/2021
1.	DOB SUBMISSION	4/17/2020

Department of Design and Construction

DIVISION OF PUBLIC BUILDINGS

CAPITAL PROJECT NUMBER:
E17-0001

PROJECT
Lighting & HVAC Energy Efficiency Upgrades - Louis J. Lefkowitz Building
80 Centre Street, New York, NY, 10013

FOR THE: NYC Department of Citywide Administrative Services

DRAWING TITLE:
SECOND FLOOR ELECTRICAL LIGHTING PLAN - WEST

DOB APPROVAL STAMP

SEAL & SIGNATURE

DATE:	23 JUNE, 2021
PROJECT NO:	E17-0001
DRAWN BY:	
CHECKED BY:	
DRAWING NUMBER:	E-202A.00
CADO FILE No:	

KEY NOTES

1. PROVIDE LIGHTING FIXTURE PER LIGHTING FIXTURE SCHEDULE. RECONNECT TO BRACH CIRCUITRY IDENTIFIED AND PROTECTED DURING DEMOLITION.EXTEND BRANCH CIRCUITRY AS REQUIRED TO MAKE THE FINAL CONNECTION. PROGRAM THE LIGHTING FIXTURES TO BE CONTROLLED BASED ON THE INPUT OF THE SMART MULTISENSOR AND THE WIRELESS LIGHTING SWITCH IN THE ROOM.
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SEE E102A FOR CONTINUATIONS

SECOND FLOOR ELECTRICAL LIGHTING PLAN - EAST 1

SCALE: 1/8"=1'-0"

0 4' 28'

4' 12'

DOB APPROVAL STAMP

Lighting & HVAC Energy Efficiency Upgrades - Louis J. Lefkowitz Building

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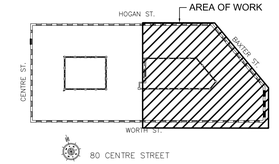
SITE PLAN



BLOCK: 166 LOT: 27

REVISIONS:

NUMBER	DESCRIPTION	DATE
4.	ISSUED FOR BID	6/23/2021
3.	COMPLIANCE SUBMISSION	3/26/2021
2.	100% CD SUBMISSION	1/26/2021
1.	DOB SUBMISSION	4/17/2020

Department of Design and Construction

DIVISION OF PUBLIC BUILDINGS

CAPITAL PROJECT NUMBER:
E17-0001

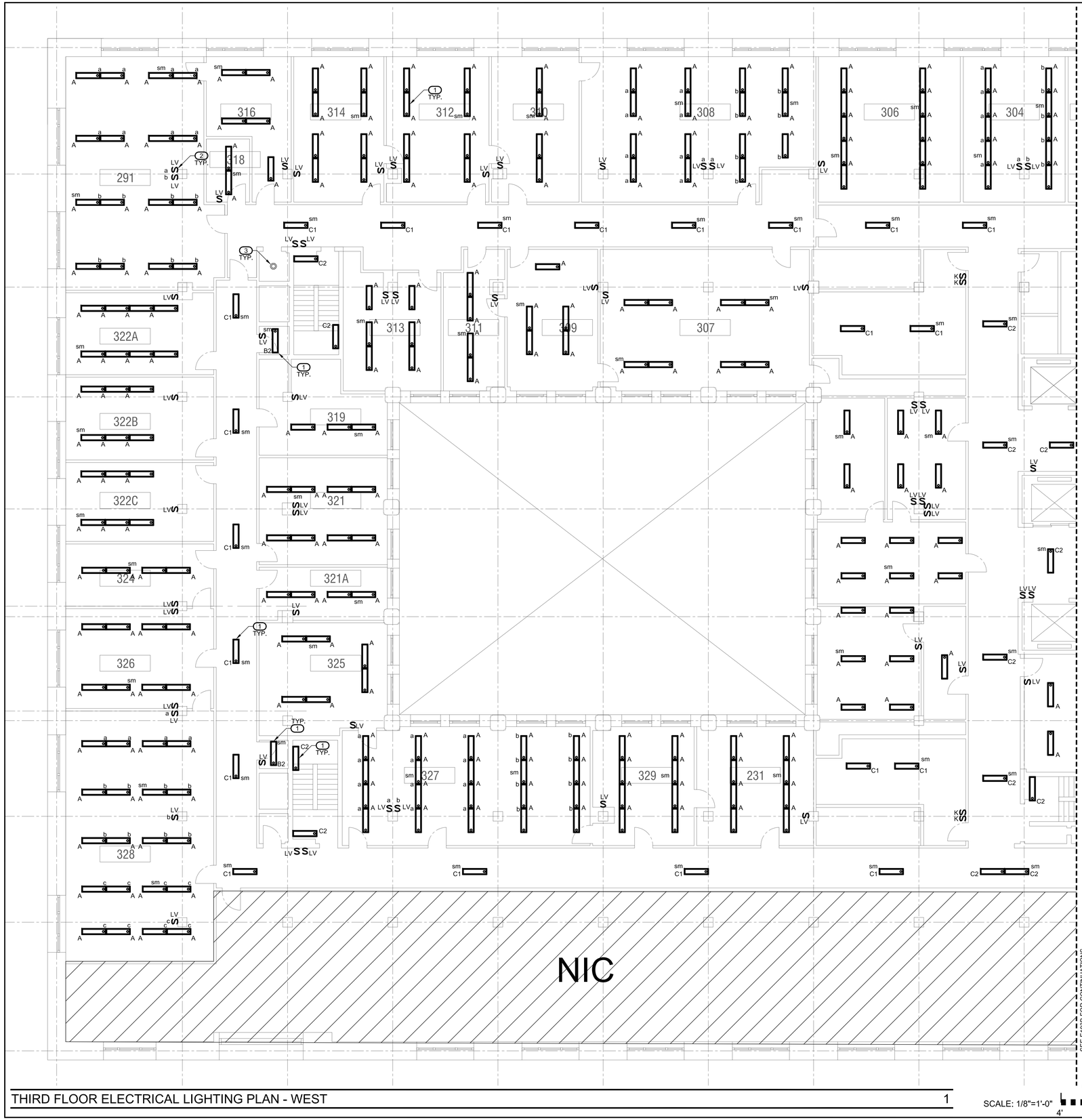
PROJECT
Lighting & HVAC Energy Efficiency Upgrades - Louis J. Lefkowitz Building
80 Centre Street, New York, NY, 10013

FOR THE: NYC Department of Citywide Administrative Services

DRAWING TITLE:
SECOND FLOOR ELECTRICAL LIGHTING PLAN - EAST

SEAL & SIGNATURE

DATE:	23 JUNE, 2021
PROJECT NO:	E17-0001
DRAWN BY:	
CHECKED BY:	
DRAWING NUMBER:	E-202B.00
CADO FILE No:	



THIRD FLOOR ELECTRICAL LIGHTING PLAN - WEST 1

SCALE: 1/8"=1'-0"

0 4' 28'

4' 12'

NOTES

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KEY NOTES

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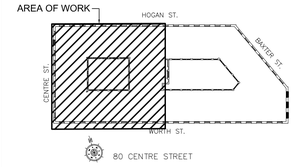
11101 Tel: 212.779.9772

Cost Estimate Consultant:
ELLANA INC.
32 BROADWAY, 8TH
FLOOR NEW YORK, NY
10004 TEL 212 971 0936

SITE PLAN



BLOCK: 166 LOT: 27

REVISIONS:

NUMBER	DESCRIPTION	DATE
4.	ISSUED FOR BID	6/23/2021
3.	COMPLIANCE SUBMISSION	3/26/2021
2.	100% CD SUBMISSION	1/26/2021
1.	DOB SUBMISSION	4/17/2020

Department of Design and Construction

DIVISION OF PUBLIC BUILDINGS

CAPITAL PROJECT NUMBER:
E17-0001

PROJECT
Lighting & HVAC Energy Efficiency Upgrades - Louis J. Lefkowitz Building
80 Centre Street, New York, NY, 10013

FOR THE: NYC Department of Citywide Administrative Services

DRAWING TITLE:
THIRD FLOOR ELECTRICAL LIGHTING PLAN - WEST

DOB APPROVAL STAMP

SEAL & SIGNATURE

DATE:	23 JUNE, 2021
PROJECT NO:	E17-0001
DRAWN BY:	
CHECKED BY:	
DRAWING NUMBER:	E-203A.00
CADO FILE No:	

KEY NOTES

1. PROVIDE LIGHTING FIXTURE PER LIGHTING FIXTURE SCHEDULE. RECONNECT TO BRACH CIRCUITRY IDENTIFIED AND PROTECTED DURING DEMOLITION.EXTEND BRANCH CIRCUITRY AS REQUIRED TO MAKE THE FINAL CONNECTION. PROGRAM THE LIGHTING FIXTURES TO BE CONTROLLED BASED ON THE INPUT OF THE SMART MULTISENSOR AND THE WIRELESS LIGHTING SWITCH IN THE ROOM.
2. PROVIDE WIRELESS LIGHTING CONTROL SWITCH. RECONNECT TO THE BRANCH CIRCUITRY IDENTIFIED AND PROTECTED DURING DEMOLITION. PROGRAM THE SWITCH TO CONTROL ALL LIGHTING FIXTURES INDICATED IN THE ROOM.
3. EXISTING LIGHTING FIXTURE SHALL REMAIN AND BE PROTECTED FOR REUSE.

NOTES

1. FOR SYMBOLS, ABBREVIATIONS AND NOTES REFER TO DRAWING E001.
2. ALL AREAS DISTURBED DUE TO CONSTRUCTION WORK SHALL BE PATCHED AND PAINTED TO MATCH EXISTING CONDITIONS. PROVIDE PAINTING OF ENTIRE WALL TO THE NEAREST CORNER.
3. MAINTAIN CONTINUITY IN ALL EXISTING CIRCUITRY TO REMAIN WHICH IS AFFECTED BY THE SCOPE OF WORK. FURNISH AND INSTALL ALL REQUIRED WIRES, CONDUITS AND JUNCTION BOXES TO KEEP CONTINUITY.
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5. ROOMS MARKED WITH AN ASTERISK IS ESTIMATED LAYOUT BASED ON ADJACENT CONDITIONS. CONTRACTOR SHALL VERIFY THE LAYOUT AND INFORM THE EOR OF ANY CHANGES FOR REVIEW AND APPROVAL PRIOR REMOVALS AND INSTALLATION WORK
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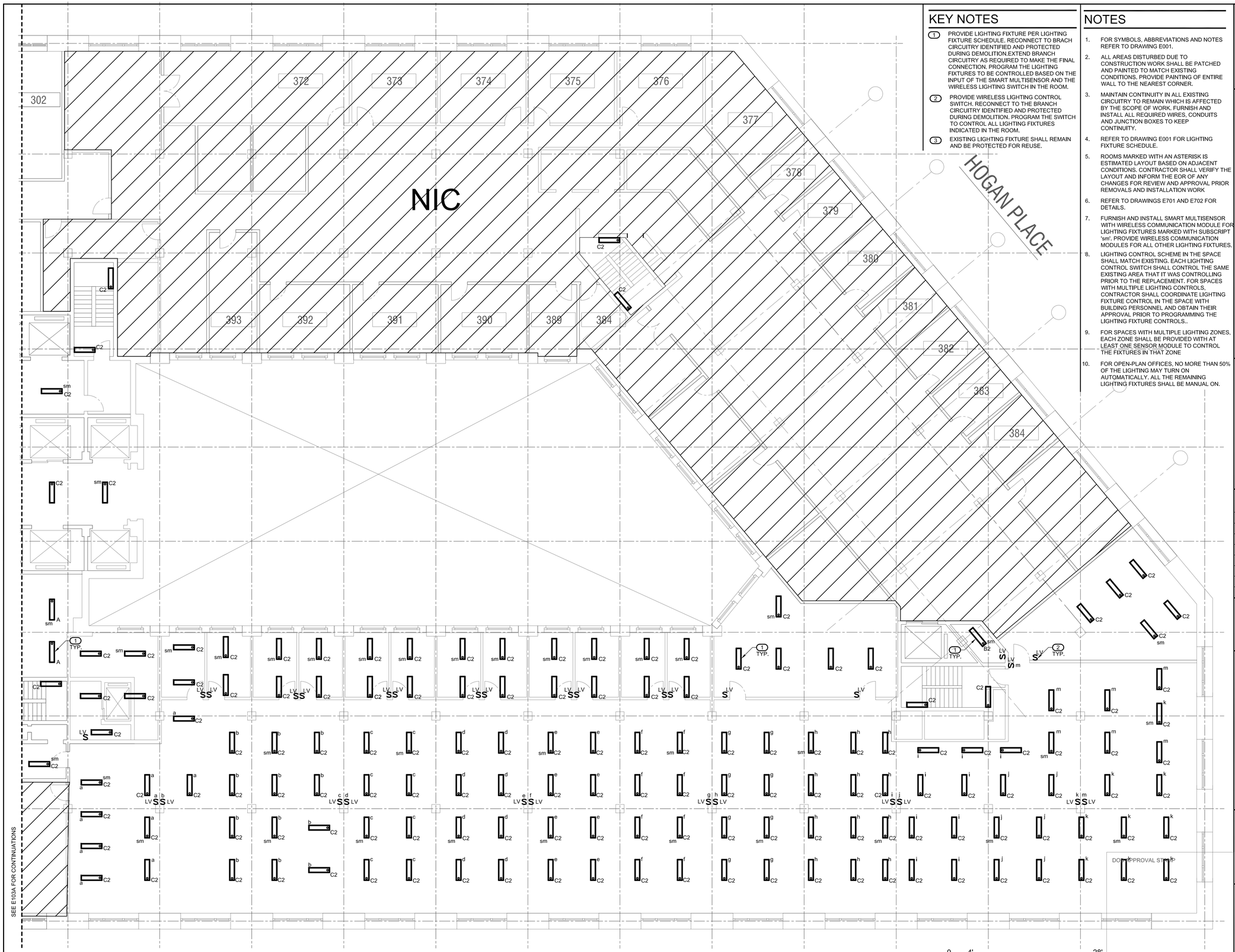

THIRD FLOOR ELECTRICAL LIGHTING PLAN - EAST 1

SCALE: 1/8"=1'-0"

0 4' 28'

4' 12'

Lighting & HVAC Energy Efficiency Upgrades - Louis J. Lefkowitz Building

MEP Engineers:
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PINEBROOK, NJ, 07058
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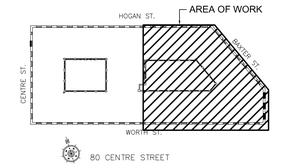
SITE PLAN



BLOCK: 166 LOT: 27

REVISIONS:

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Department of Design and Construction

DIVISION OF PUBLIC BUILDINGS

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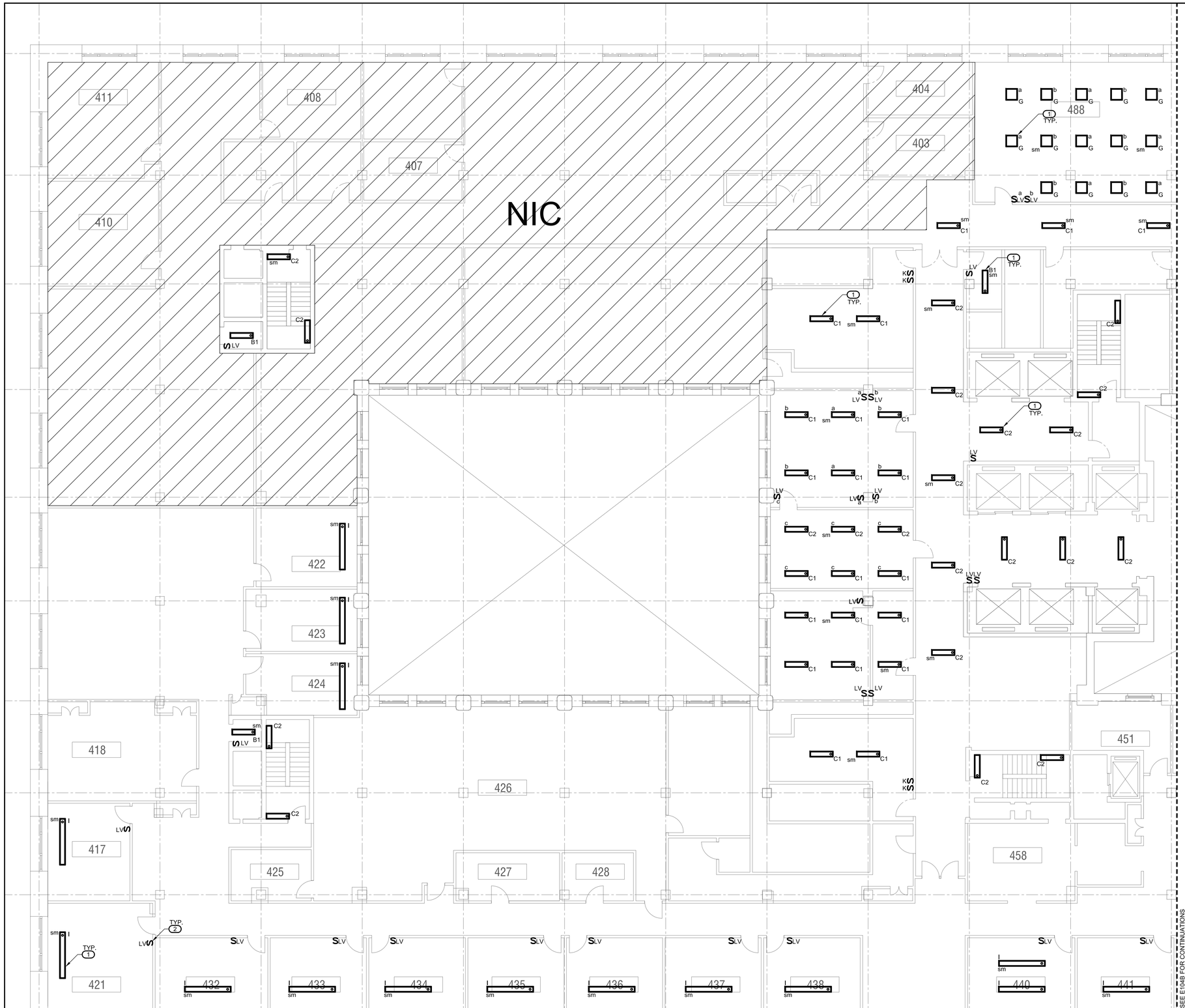
80 Centre Street, New York, NY, 10013

FOR THE: NYC Department of Citywide Administrative Services

DRAWING TITLE:
THIRD FLOOR ELECTRICAL LIGHTING PLAN - EAST

SEAL & SIGNATURE

DATE:	23 JUNE, 2021
PROJECT NO:	E17-0001
DRAWN BY:	
CHECKED BY:	
DRAWING NUMBER:	E-203B.00
CADO FILE No:	52 OF 63



FOURTH FLOOR ELECTRICAL LIGHTING PLAN - WEST 1

SCALE: 1/8"=1'-0" 0 4' 28' 4' 12'

NOTES

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9. NEW LIGHTING FIXTURES IN SPACES WITH EXISTING CONTROLS SHALL BE COMPATIBLE WITH THE EXISTING CONTROL SCHEME. CONTRACTOR SHALL VERIFY THE COMPATIBILITY PRIOR TO ORDERING THE LIGHTING FIXTURES AND PROVIDE DOCUMENTATION OF COMPLIANCE FOR EOR'S RECORD. PROVIDE ANY ACCESSORIES REQUIRED TO MAKE THE LIGHTING FIXTURES COMPATIBLE WITH EXISTING CONTROLS.
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KEY NOTES

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DOB APPROVAL STAMP

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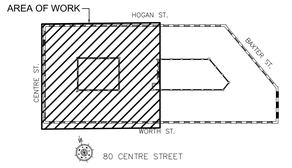

BLOCK: 166 LOT: 27

REVISIONS:

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Department of Design and Construction

DIVISION OF PUBLIC BUILDINGS

CAPITAL PROJECT NUMBER:
E17-0001

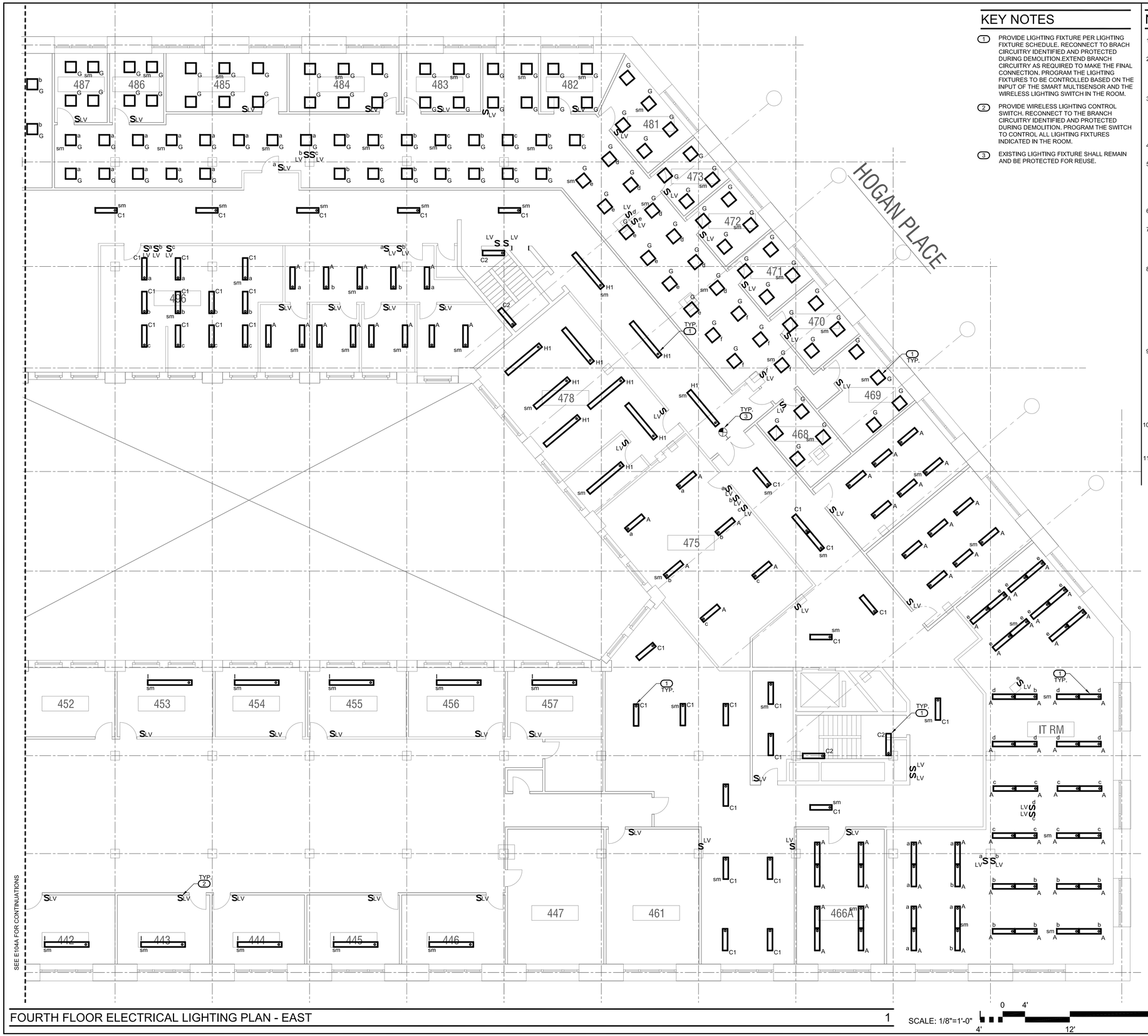
PROJECT
Lighting & HVAC Energy Efficiency Upgrades - Louis J. Lefkowitz Building
80 Centre Street, New York, NY, 10013

FOR THE: NYC Department of Citywide Administrative Services

DRAWING TITLE:
FOURTH FLOOR ELECTRICAL LIGHTING PLAN - WEST

SEAL & SIGNATURE

DATE: 23 JUNE, 2021
PROJECT NO: E17-0001
DRAWN BY:
CHECKED BY:
DRAWING NUMBER:
E-204A.00
CADO FILE No:
53 OF 63



FOURTH FLOOR ELECTRICAL LIGHTING PLAN - EAST 1

SCALE: 1/8"=1'-0"

0 4' 12' 28'

KEY NOTES

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DOB APPROVAL STAMP

Lighting & HVAC Energy Efficiency Upgrades - Louis J. Lefkowitz Building

MEP Engineers:
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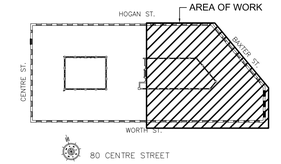
SITE PLAN



BLOCK: 166 LOT: 27

REVISIONS:

NUMBER	DESCRIPTION	DATE
4.	ISSUED FOR BID	6/23/2021
3.	COMPLIANCE SUBMISSION	3/26/2021
2.	100% CD SUBMISSION	1/26/2021
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Department of Design and Construction

DIVISION OF PUBLIC BUILDINGS

CAPITAL PROJECT NUMBER:
E17-0001

PROJECT
Lighting & HVAC Energy Efficiency Upgrades - Louis J. Lefkowitz Building
80 Centre Street, New York, NY, 10013

FOR THE: NYC Department of Citywide Administrative Services

DRAWING TITLE:
FOURTH FLOOR ELECTRICAL LIGHTING PLAN - EAST

SEAL & SIGNATURE

DATE: 23 JUNE, 2021
PROJECT NO: E17-0001
DRAWN BY:
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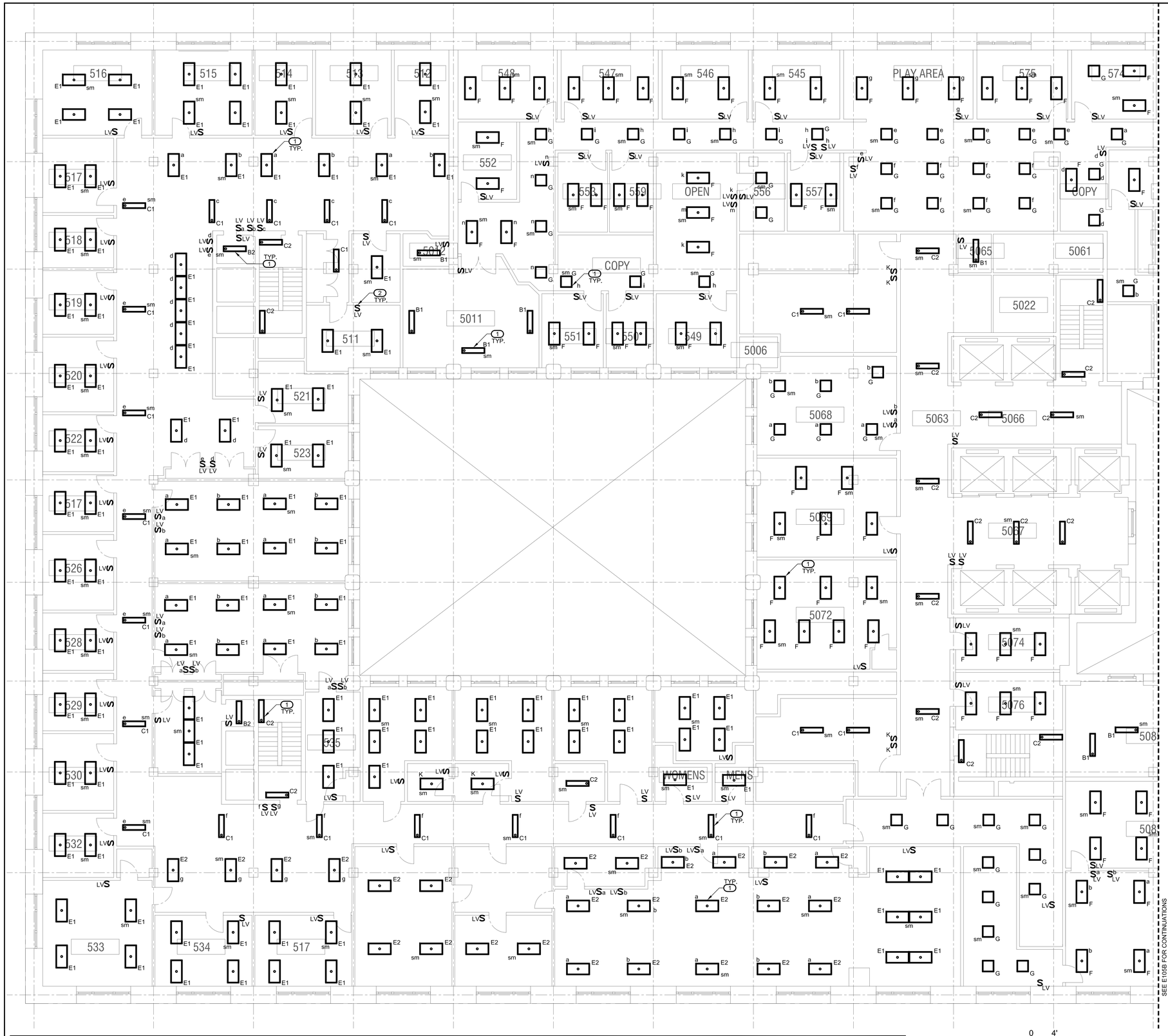
54 OF 63



FIFTH FLOOR ELECTRICAL LIGHTING PLAN - WEST 1

SCALE: 1/8"=1'-0" 0 4' 12' 28'

SEE E105B FOR CONTINUATIONS

NOTES

1. FOR SYMBOLS, ABBREVIATIONS AND NOTES REFER TO DRAWING E001.
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KEY NOTES

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DOB APPROVAL STAMP

SEAL & SIGNATURE

Lighting & HVAC Energy Efficiency Upgrades - Louis J. Lefkowitz Building

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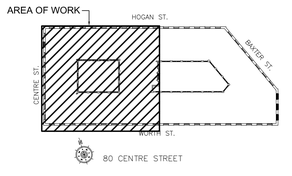
SITE PLAN



BLOCK: 166 LOT: 27

REVISIONS:

NUMBER	DESCRIPTION	DATE
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Department of Design and Construction

DIVISION OF PUBLIC BUILDINGS

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80 Centre Street, New York, NY, 10013
FOR THE: NYC Department of Citywide Administrative Services

DRAWING TITLE:
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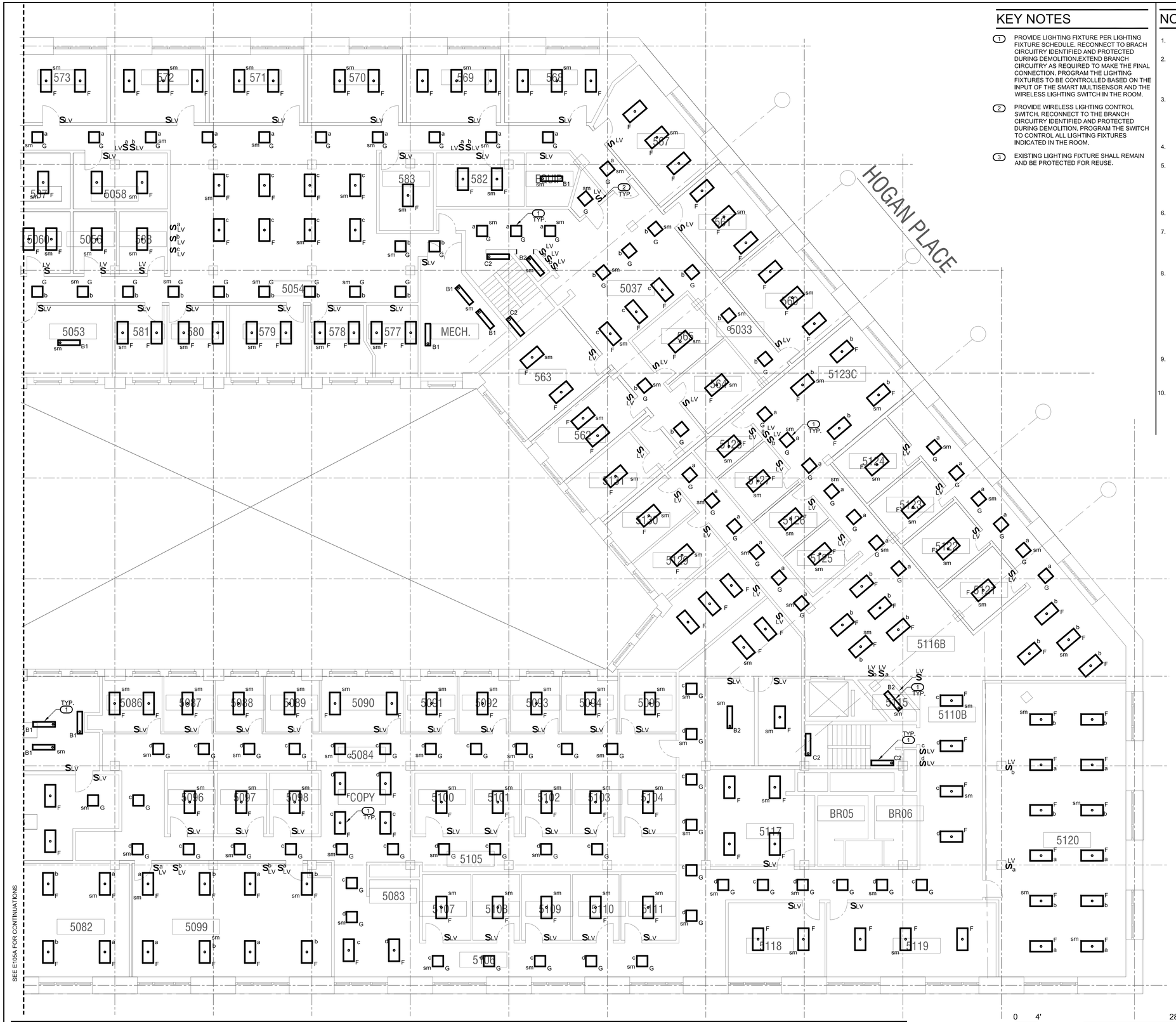

FIFTH FLOOR ELECTRICAL LIGHTING PLAN - EAST 1

SCALE: 1/8"=1'-0"

0 4' 28'

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KEY NOTES

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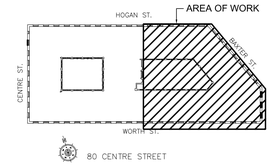

BLOCK: 166 LOT: 27

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2.	100% CD SUBMISSION	1/26/2021
1.	DOB SUBMISSION	4/17/2020

Department of Design and Construction

DIVISION OF PUBLIC BUILDINGS

CAPITAL PROJECT NUMBER:
E17-0001

PROJECT
Lighting & HVAC Energy Efficiency Upgrades - Louis J. Lefkowitz Building
80 Centre Street, New York, NY, 10013

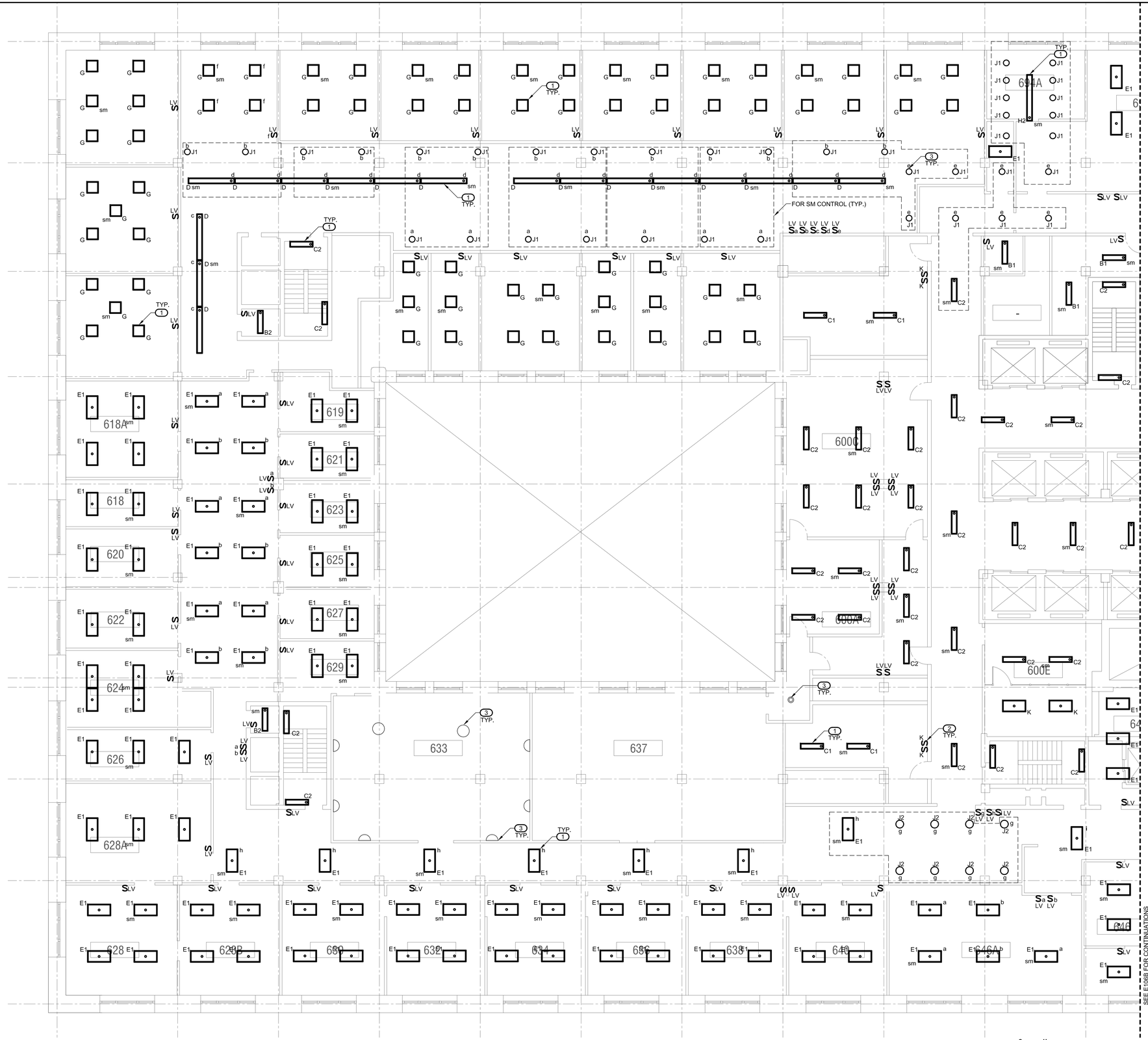
FOR THE: NYC Department of Citywide Administrative Services

DRAWING TITLE:
FIFTH FLOOR ELECTRICAL LIGHTING PLAN - EAST

DOB APPROVAL STAMP

SEAL & SIGNATURE

DATE: 23 JUNE, 2021
PROJECT NO: E17-0001
DRAWN BY:
CHECKED BY:
DRAWING NUMBER:
E-205B.00
CADO FILE No:



SIXTH FLOOR ELECTRICAL LIGHTING PLAN - WEST 1

NOTES

1. FOR SYMBOLS, ABBREVIATIONS AND NOTES REFER TO DRAWING E001.
2. ALL AREAS DISTURBED DUE TO CONSTRUCTION WORK SHALL BE PATCHED AND PAINTED TO MATCH EXISTING CONDITIONS. PROVIDE PAINTING OF ENTIRE WALL TO THE NEAREST CORNER.
3. MAINTAIN CONTINUITY IN ALL EXISTING CIRCUITRY TO REMAIN WHICH IS AFFECTED BY THE SCOPE OF WORK. FURNISH AND INSTALL ALL REQUIRED WIRES, CONDUITS AND JUNCTION BOXES TO KEEP CONTINUITY.
4. REFER TO DRAWING E001 FOR LIGHTING FIXTURE SCHEDULE.
5. ROOMS MARKED WITH AN ASTERISK IS ESTIMATED LAYOUT BASED ON ADJACENT CONDITIONS. CONTRACTOR SHALL VERIFY THE LAYOUT AND INFORM THE EOR OF ANY CHANGES FOR REVIEW AND APPROVAL PRIOR REMOVALS AND INSTALLATION WORK
6. REFER TO DRAWINGS E701 AND E702 FOR DETAILS.
7. FURNISH AND INSTALL SMART MULTISENSOR WITH WIRELESS COMMUNICATION MODULE FOR LIGHTING FIXTURES MARKED WITH SUBSCRIPT 'sm'. PROVIDE WIRELESS COMMUNICATION MODULES FOR ALL OTHER LIGHTING FIXTURES.
8. LIGHTING CONTROL SCHEME IN THE SPACE SHALL MATCH EXISTING. EACH LIGHTING CONTROL SWITCH SHALL CONTROL THE SAME EXISTING AREA THAT IT WAS CONTROLLING PRIOR TO THE REPLACEMENT. FOR SPACES WITH MULTIPLE LIGHTING CONTROLS, CONTRACTOR SHALL COORDINATE LIGHTING FIXTURE CONTROL IN THE SPACE WITH BUILDING PERSONNEL AND OBTAIN THEIR APPROVAL PRIOR TO PROGRAMMING THE LIGHTING FIXTURE CONTROLS.
9. FOR SPACES WITH MULTIPLE LIGHTING ZONES, EACH ZONE SHALL BE PROVIDED WITH AT LEAST ONE SENSOR MODULE TO CONTROL THE FIXTURES IN THAT ZONE
10. FOR OPEN-PLAN OFFICES, NO MORE THAN 50% OF THE LIGHTING MAY TURN ON AUTOMATICALLY. ALL THE REMAINING LIGHTING FIXTURES SHALL BE MANUAL ON.

KEY NOTES

(1) PROVIDE LIGHTING FIXTURE PER LIGHTING FIXTURE SCHEDULE. RECONNECT TO BRACH CIRCUITRY IDENTIFIED AND PROTECTED DURING DEMOLITION.EXTEND BRANCH CIRCUITRY AS REQUIRED TO MAKE THE FINAL CONNECTION. PROGRAM THE LIGHTING FIXTURES TO BE CONTROLLED BASED ON THE INPUT OF THE SMART MULTISENSOR AND THE WIRELESS LIGHTING SWITCH IN THE ROOM. CONTRACTOR SHALL INSTALL SENSOR MODULE TO ALL D TYPE FIXTURES IDENTIFIED AS "sm" ON THE FLOOR PLANS.

(2) PROVIDE WIRELESS LIGHTING CONTROL SWITCH. RECONNECT TO THE BRANCH CIRCUITRY IDENTIFIED AND PROTECTED DURING DEMOLITION. PROGRAM THE SWITCH TO CONTROL ALL LIGHTING FIXTURES INDICATED IN THE ROOM.

(3) EXISTING LIGHTING FIXTURE SHALL REMAIN AND BE PROTECTED FOR REUSE.

DOB APPROVAL STAMP

SEAL & SIGNATURE

Lighting & HVAC Energy Efficiency Upgrades - Louis J. Lefkowitz Building

MEP Engineers:
SHENOY ENGINEERING, PC
39 US HWY 46 E, SUITE 802
PINEBROOK, NJ, 07058
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Architect
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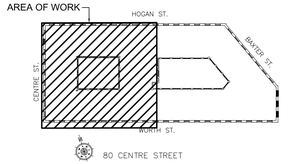
Ste 319 Long Island City, NY
11101 Tel: 212.779.9772

Cost Estimate Consultant:
ELLANA INC.
32 BROADWAY, 8TH
FLOOR NEW YORK, NY
10004 TEL 212 971 0936

SITE PLAN



BLOCK: 166 LOT: 27

REVISIONS:

NUMBER	DESCRIPTION	DATE
4.	ISSUED FOR BID	6/23/2021
3.	COMPLIANCE SUBMISSION	3/26/2021
2.	100% CD SUBMISSION	1/26/2021
1.	DOB SUBMISSION	4/17/2020

Department of Design and Construction

DIVISION OF PUBLIC BUILDINGS

CAPITAL PROJECT NUMBER:
E17-0001

PROJECT
Lighting & HVAC Energy Efficiency Upgrades - Louis J. Lefkowitz Building
80 Centre Street, New York, NY, 10013

FOR THE: NYC Department of Citywide Administrative Services

DRAWING TITLE:
SIXTH FLOOR ELECTRICAL LIGHTING PLAN - WEST

DATE:	23 JUNE, 2021
PROJECT NO:	E17-0001
DRAWN BY:	
CHECKED BY:	
DRAWING NUMBER:	E-206A.00
CADO FILE No:	57 OF 63

KEY NOTES

1. PROVIDE LIGHTING FIXTURE PER LIGHTING FIXTURE SCHEDULE. RECONNECT TO BRACH CIRCUITRY IDENTIFIED AND PROTECTED DURING DEMOLITION.EXTEND BRANCH CIRCUITRY AS REQUIRED TO MAKE THE FINAL CONNECTION. PROGRAM THE LIGHTING FIXTURES TO BE CONTROLLED BASED ON THE INPUT OF THE SMART MULTISENSOR AND THE WIRELESS LIGHTING SWITCH IN THE ROOM.
2. PROVIDE WIRELESS LIGHTING CONTROL SWITCH. RECONNECT TO THE BRANCH CIRCUITRY IDENTIFIED AND PROTECTED DURING DEMOLITION. PROGRAM THE SWITCH TO CONTROL ALL LIGHTING FIXTURES INDICATED IN THE ROOM.
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NOTES

1. FOR SYMBOLS, ABBREVIATIONS AND NOTES REFER TO DRAWING E001.
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3. MAINTAIN CONTINUITY IN ALL EXISTING CIRCUITRY TO REMAIN WHICH IS AFFECTED BY THE SCOPE OF WORK. FURNISH AND INSTALL ALL REQUIRED WIRES, CONDUITS AND JUNCTION BOXES TO KEEP CONTINUITY.
4. REFER TO DRAWING E001 FOR LIGHTING FIXTURE SCHEDULE.
5. ROOMS MARKED WITH AN ASTERISK IS ESTIMATED LAYOUT BASED ON ADJACENT CONDITIONS. CONTRACTOR SHALL VERIFY THE LAYOUT AND INFORM THE EOR OF ANY CHANGES FOR REVIEW AND APPROVAL PRIOR REMOVALS AND INSTALLATION WORK
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7. FURNISH AND INSTALL SMART MULTISENSOR WITH WIRELESS COMMUNICATION MODULE FOR LIGHTING FIXTURES MARKED WITH SUBSCRIPT 'sm'. PROVIDE WIRELESS COMMUNICATION MODULES FOR ALL OTHER LIGHTING FIXTURES.
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10. FOR OPEN-PLAN OFFICES, NO MORE THAN 50% OF THE LIGHTING MAY TURN ON AUTOMATICALLY, ALL THE REMAINING LIGHTING FIXTURES SHALL BE MANUAL ON.

HOGAN PLACE

I.T.

FISCAL

SEE E106A FOR CONTINUATIONS

SIXTH FLOOR ELECTRICAL LIGHTING PLAN - EAST 1

SCALE: 1/8"=1'-0"

0 4' 28'

4' 12'

DOB APPROVAL STAMP

Lighting & HVAC Energy Efficiency Upgrades - Louis J. Lefkowitz Building

MEP Engineers:
SHENOY ENGINEERING, PC
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(973)808-4090 phone
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Cost Estimate Consultant:
ELLANA INC.
32 BROADWAY, 8TH
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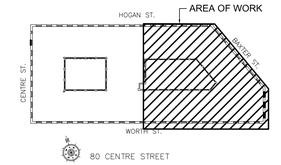
SITE PLAN



BLOCK: 166 LOT: 27

REVISIONS:

NUMBER	DESCRIPTION	DATE
4.	ISSUED FOR BID	6/23/2021
3.	COMPLIANCE SUBMISSION	3/26/2021
2.	100% CD SUBMISSION	1/26/2021
1.	DOB SUBMISSION	4/17/2020

Department of Design and Construction

DIVISION OF PUBLIC BUILDINGS

CAPITAL PROJECT NUMBER:
E17-0001

PROJECT
Lighting & HVAC Energy Efficiency Upgrades - Louis J. Lefkowitz Building
80 Centre Street, New York, NY, 10013

FOR THE: NYC Department of Citywide Administrative Services

DRAWING TITLE:
SIXTH FLOOR ELECTRICAL LIGHTING PLAN - EAST

SEAL & SIGNATURE

DATE:	23 JUNE, 2021
PROJECT NO:	E17-0001
DRAWN BY:	
CHECKED BY:	
DRAWING NUMBER:	E-206B.00
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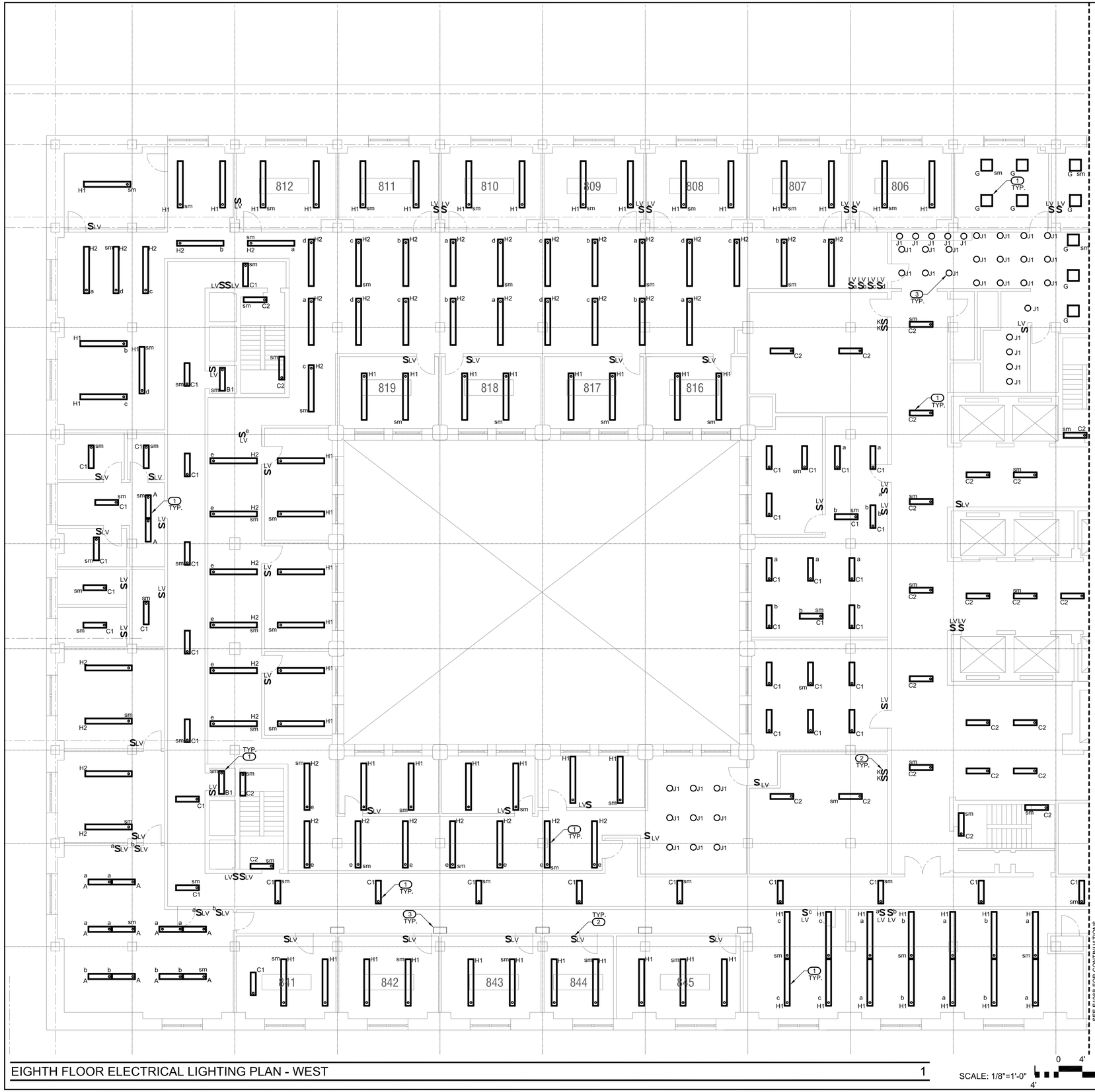

EIGHTH FLOOR ELECTRICAL LIGHTING PLAN - WEST 1

SCALE: 1/8"=1'-0"

0 4' 28'

4' 12'

NOTES

1. FOR SYMBOLS, ABBREVIATIONS AND NOTES REFER TO DRAWING E001.
2. ALL AREAS DISTURBED DUE TO CONSTRUCTION WORK SHALL BE PATCHED AND PAINTED TO MATCH EXISTING CONDITIONS. PROVIDE PAINTING OF ENTIRE WALL TO THE NEAREST CORNER.
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5. ROOMS MARKED WITH AN ASTERISK IS ESTIMATED LAYOUT BASED ON ADJACENT CONDITIONS. CONTRACTOR SHALL VERIFY THE LAYOUT AND INFORM THE EOR OF ANY CHANGES FOR REVIEW AND APPROVAL PRIOR REMOVALS AND INSTALLATION WORK
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10. FOR OPEN-PLAN OFFICES, NO MORE THAN 50% OF THE LIGHTING MAY TURN ON AUTOMATICALLY. ALL THE REMAINING LIGHTING FIXTURES SHALL BE MANUAL ON.

KEY NOTES

(1) PROVIDE LIGHTING FIXTURE PER LIGHTING FIXTURE SCHEDULE. RECONNECT TO BRACH CIRCUITRY IDENTIFIED AND PROTECTED DURING DEMOLITION.EXTEND BRANCH CIRCUITRY AS REQUIRED TO MAKE THE FINAL CONNECTION. PROGRAM THE LIGHTING FIXTURES TO BE CONTROLLED BASED ON THE INPUT OF THE SMART MULTISENSOR AND THE WIRELESS LIGHTING SWITCH IN THE ROOM.

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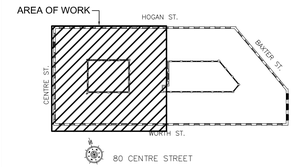
SITE PLAN



BLOCK: 166 LOT: 27

REVISIONS:

NUMBER	DESCRIPTION	DATE
4.	ISSUED FOR BID	6/23/2021
3.	COMPLIANCE SUBMISSION	3/26/2021
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Department of Design and Construction

DIVISION OF PUBLIC BUILDINGS

CAPITAL PROJECT NUMBER:
E17-0001

PROJECT
Lighting & HVAC Energy Efficiency Upgrades - Louis J. Lefkowitz Building
80 Centre Street, New York, NY, 10013

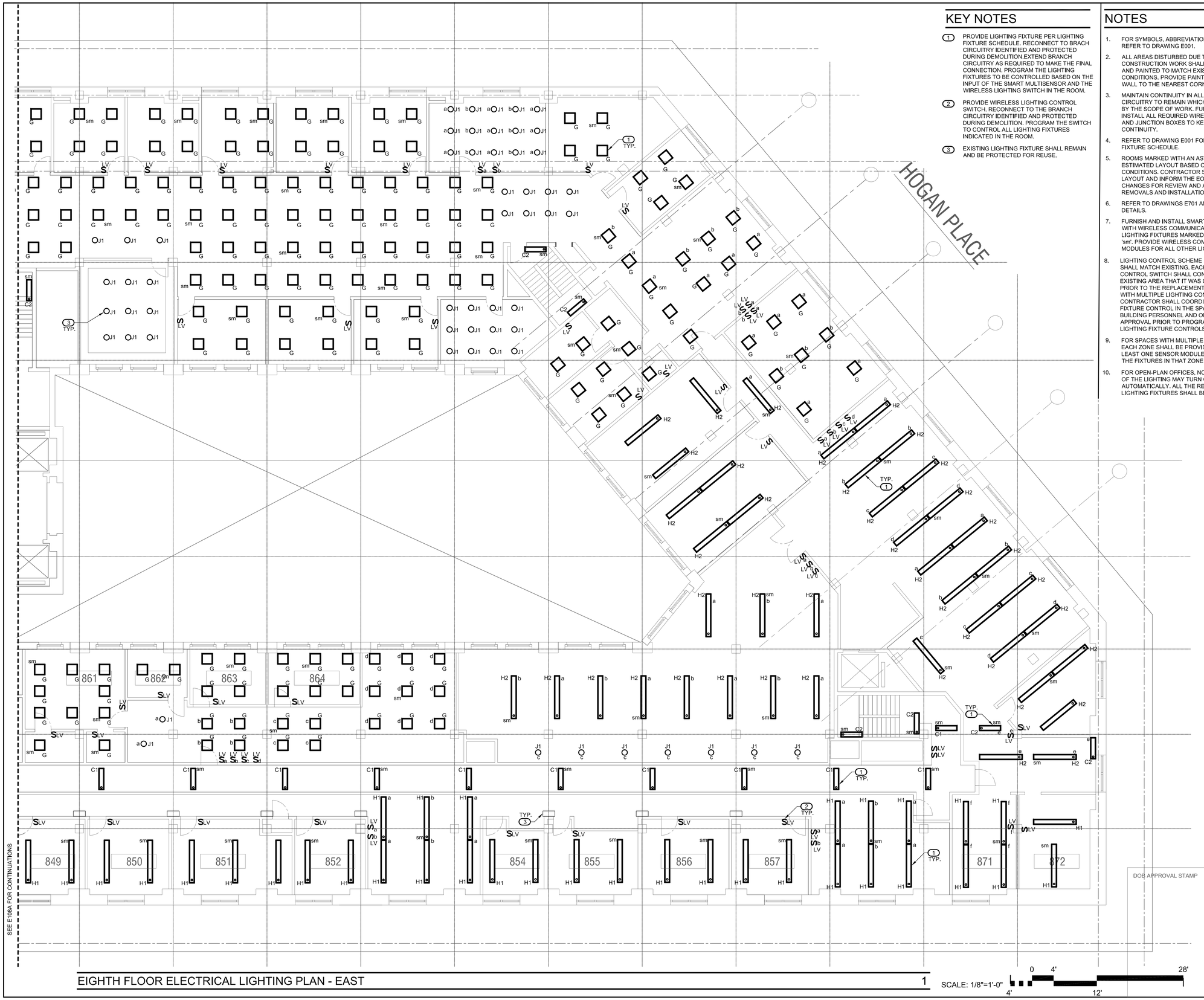
FOR THE: NYC Department of Citywide Administrative Services

DRAWING TITLE:
EIGHTH FLOOR ELECTRICAL LIGHTING PLAN - WEST

DOB APPROVAL STAMP

SEAL & SIGNATURE

DATE:	23 JUNE, 2021
PROJECT NO:	E17-0001
DRAWN BY:	
CHECKED BY:	
DRAWING NUMBER:	E-207A.00
CADO FILE No:	59 OF 63



KEY NOTES

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Lighting & HVAC Energy Efficiency Upgrades - Louis J. Lefkowitz Building

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Cost Estimate Consultant:
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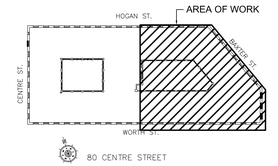
SITE PLAN



BLOCK: 166 LOT: 27

REVISIONS:

NUMBER	DESCRIPTION	DATE
4.	ISSUED FOR BID	6/23/2021
3.	COMPLIANCE SUBMISSION	3/26/2021
2.	100% CD SUBMISSION	1/26/2021
1.	DOB SUBMISSION	4/17/2020

Department of Design and Construction

DIVISION OF PUBLIC BUILDINGS

CAPITAL PROJECT NUMBER:
E17-0001

PROJECT
Lighting & HVAC Energy Efficiency Upgrades - Louis J. Lefkowitz Building
80 Centre Street, New York, NY, 10013

FOR THE: NYC Department of Citywide Administrative Services

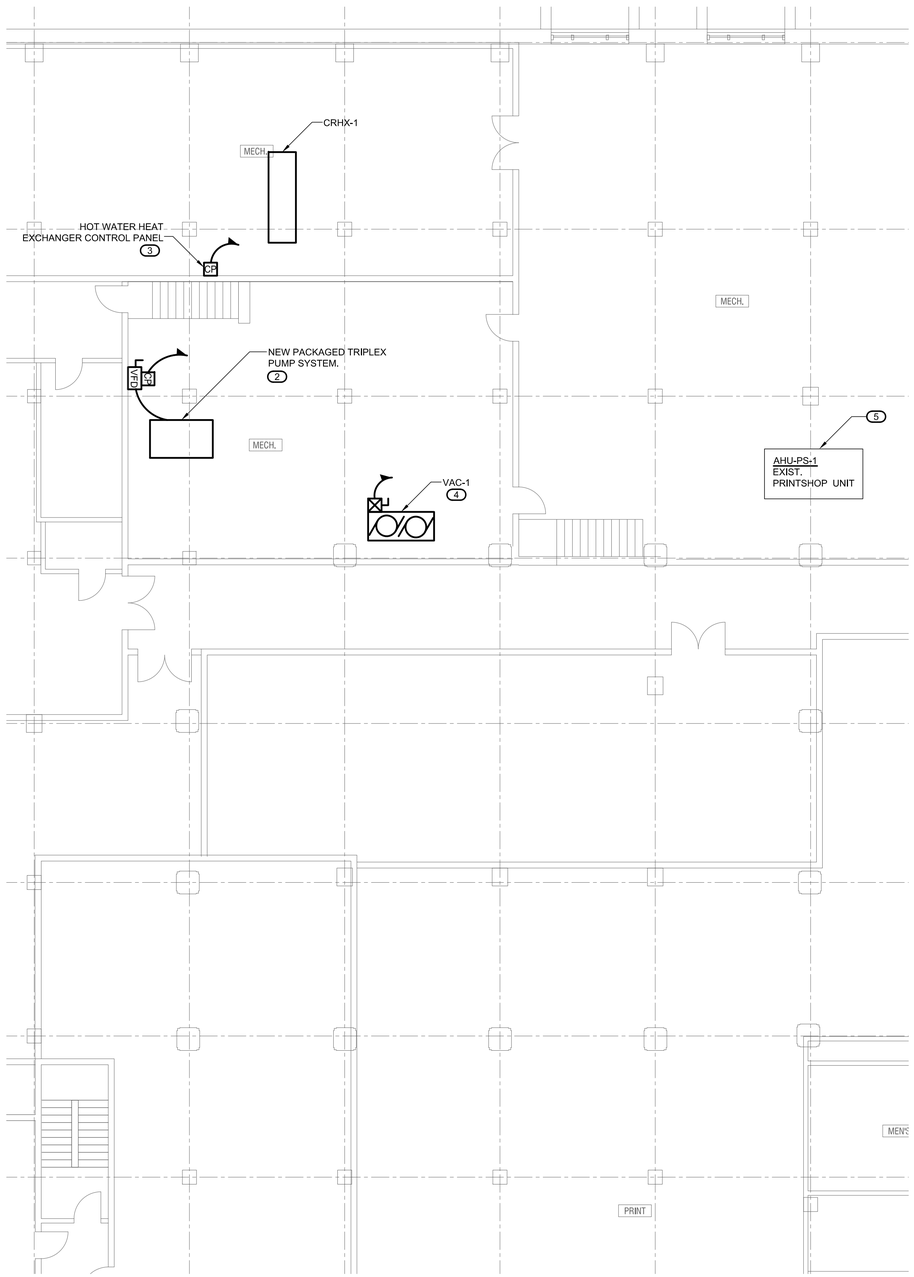
DRAWING TITLE:
EIGHTH FLOOR ELECTRICAL LIGHTING PLAN - EAST

SEAL & SIGNATURE

DATE: 23 JUNE, 2021
PROJECT NO: E17-0001
DRAWN BY:
CHECKED BY:
DRAWING NUMBER:
E-207B.00
CADO FILE No:
60 OF 63

EIGHTH FLOOR ELECTRICAL LIGHTING PLAN - EAST 1

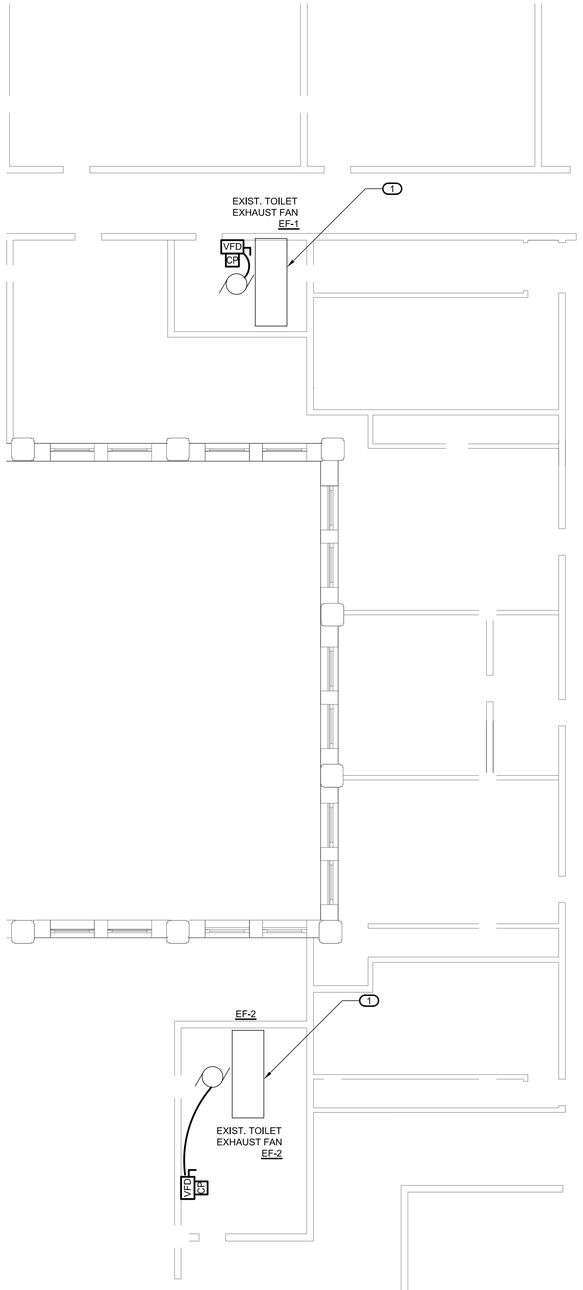
SCALE: 1/8"=1'-0" 0 4' 28' 4' 12'



BASEMENT NEW WORK PART PLAN 1

SCALE: 1/8"=1'-0"

0 4' 28'
4' 12'



NINTH FLOOR NEW WORK PART PLAN 2

SCALE: 1/8"=1'-0"

0 4' 28'
4' 12'

GENERAL NOTES

1. REFER TO E001 FOR SYMBOLS, NOTES AND ABBREVIATIONS.
2. FOR EXACT LOCATIONS OF HVAC EQUIPMENT AND WORK RELATED TO THE HVAC EQUIPMENT, REFER TO HVAC DRAWINGS

KEY NOTES

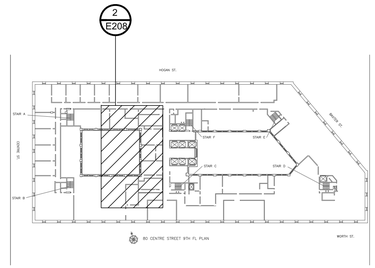
(1) PROVIDE VFD FOR FAN. RECONNECT TO BRANCH CIRCUITRY IDENTIFIED AND PROTECTED DURING DEMOLITION. EXTEND BRANCH CIRCUITRY AS REQUIRED FOR THE FINAL CONNECTION.

(2) PROVIDE POWER CONNECTION TO PUMP SYSTEM. RECONNECT TO THE BRANCH CIRCUITRY IDENTIFIED AND PROTECTED DURING DEMOLITION. EXTEND BRANCH CIRCUITRY AS REQUIRED FOR THE FINAL CONNECTION. NEW WIRING AND CONDUIT SHALL MATCH EXISTING.

(3) PROVIDE CONTROL PANEL FOR HOT WATER HEAT EXCHANGER. USE 2#12 , 1#12G IN 3/4" C. PROVIDE ALL ACCESSORIES AS REQUIRED FOR THE INSTALLATION.

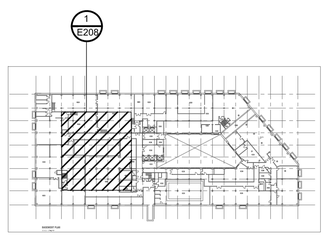
(4) PROVIDE POWER CONNECTION FOR NEW DUPLEX VACUUM PUMP. PROVIDE WIRING, CONDUIT AND ALL ACCESSORIES AS REQUIRED FOR INSTALLATION.

(5) PROVIDE POWER CONNECTION TO AIR HANDLING UNIT. RECONNECT TO THE BRANCH CIRCUITRY IDENTIFIED AND PROTECTED DURING DEMOLITION. EXTEND BRANCH CIRCUITRY AS REQUIRED FOR THE FINAL CONNECTION. NEW WIRING AND CONDUIT SHALL MATCH EXISTING.



NINTH FLOOR KEY PLAN 3

NOT TO SCALE



BASEMENT KEY PLAN 4

NOT TO SCALE

Lighting & HVAC Energy Efficiency Upgrades - Louis J. Lefkowitz Building

MEP Engineers:
SHENOY ENGINEERING, PC
39 US HWY 46 E, SUITE 802
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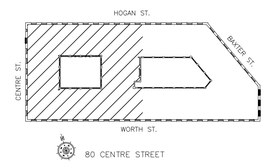
FLOOR NEW YORK, NY
10004 TEL 212 971 0936

SITE PLAN



BLOCK: 166 LOT: 27

REVISIONS:

NUMBER	DESCRIPTION	DATE
4.	ISSUED FOR BID	6/23/2021
3.	COMPLIANCE SUBMISSION	3/26/2021
2.	100% CD SUBMISSION	1/26/2021
1.	DOB SUBMISSION	4/17/2020

Department of Design and Construction

DIVISION OF PUBLIC BUILDINGS

CAPITAL PROJECT NUMBER:
E17-0001

PROJECT
Lighting & HVAC Energy Efficiency Upgrades - Louis J. Lefkowitz Building
80 Centre Street, New York, NY, 10013

FOR THE: NYC Department of Citywide Administrative Services

DRAWING TITLE:
ELECTRICAL NEW WORK PART PLANS - BASEMENET AND NINTH FLOOR

DOB APPROVAL STAMP

SEAL & SIGNATURE

DATE: 23 JUNE, 2021
PROJECT NO: E17-0001
DRAWN BY:
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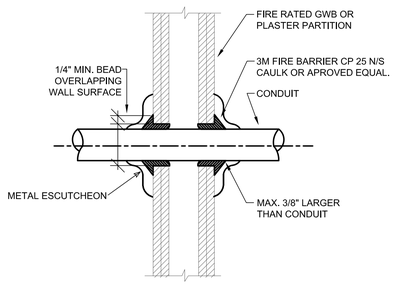
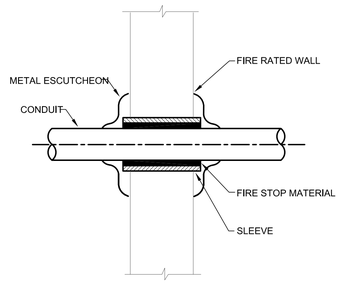
61 OF 63



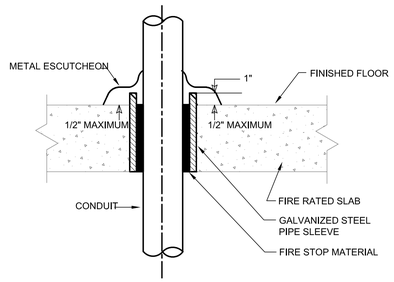
CONDUIT PENETRATION DETAIL - THRU FIRE RATED GWB OR PLASTER PARTITION 1

SCALE: N.T.S.



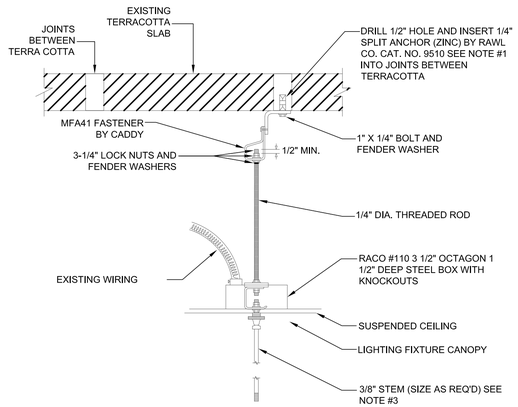
CONDUIT PENETRATION DETAIL - THRU FIRE RATED SOLID WALL 2

SCALE: N.T.S.



CONDUIT PENETRATION DETAIL - THRU FIRE RATED SLAB 3

SCALE: N.T.S.



NOTES:

1. ANCHOR ATTACHMENTS SHALL BE IN THE JOINT BETWEEN TERRA COTTA. INSERT THREADED CONE FIRST, POSITION DEVICE (L-SHAPED CORNER), INSERT BOLT. FOR MAXIMUM EXPANSION, THE ANCHOR SHOULD PROTRUDE SLIGHTLY ABOVE SURFACE OF MASONRY BEFORE SETTING IN PLACE.
2. APPLY LOCKTITE (BLUE) ON ALL THREADS
3. ALL HARDWARE SHALL BE CAD. PLATED
4. MOUNTING OF LIGHTING FIXTURES SHALL MATCH EXISTING AT THAT LOCATION. LIGHTING FIXTURES TO BE ANCHORED TO THE STRUCTURAL SLAB SHALL BE ANCHORED AS INDICATED IN THIS DETAIL.
5. CONTRACTOR SHALL PROTECT EXISTING TERRA COTTA STRUCTURE AND ENSURE NO CRACKING OR CHIPPING DAMAGE. REMOVE AND REPLACE ALL DAMAGE TO EXISTING STRUCTURE THAT WAS A RESULT OF THE CONTRACTORS WORK.

LIGHTING SUPPORT FOR LIGHTING FIXTURE ANCHORED TO TERRA COTTA SLAB STRUCTURE 4

N.T.S.

CEILING PATCHING NOTES:

WHERE REPLACEMENT OF THE EXISTING LIGHTING FIXTURE WITH NEW LIGHTING FIXTURES REQUIRES CUTTING AND PATCHING, CREATES CRACKING, BUCKLES OR IMPERFECTIONS IN THE EXISTING CEILING, REPAIR THE CEILING AS FOLLOWS.

1. REMOVE DEFECTIVE AND LOOSE PLASTER
2. CLEAN PLASTER SURFACES TO BE REPAIRED, REMOVE LOOSE AND DELETERIOUS MATERIALS THAT MAY AFFECT ADHESION OR APPLICATION OF NEW PLASTER. REATTACH LOOSE LATH OR REPLACE DEFECTIVE LATH AS REQUIRED
3. USE BONDING AGENT TO ENSURE ADHESION OF NEW PLASTER. INSTALL KEYING SYSTEMS FOR LARGER PIECES AS NECESSARY
4. MEASURE AND LAYOUT REPAIR PLASTER ACCURATELY TO MAINTAIN SURFACE TEXTURES AND PATTERN AND ALIGNMENT OF SURFACES OF THE WORK
5. CUT, PATCH, POINT UP, AND REPAIR EXISTING AND NEW PLASTER AS NECESSARY TO ACCOMMODATE NEW PLASTER AND OTHER WORK AND TO ELIMINATE CRACKS, DENTS, AND IMPERFECTIONS. REPAIR OR REPLACE WORK TO ELIMINATE BLISTERS, BUCKLES, EXCESSIVE CRAZING AND CHECK CRACKING, DRY OUTS, EFFLORESCENCE, SWEAT OUTS, AND SIMILAR DEFECTS AND WHERE BOND TO THE SUBSTRATE HAS FAILED
6. SAND SMOOTH-TROWELED FINISHES LIGHTLY TO REMOVE TROWEL MARKS AND ARISES
7. CEILINGS SHALL BE RESTORED TO ORIGINAL AND EXISTING CONDITIONS AND AS ACCEPTABLE TO THE COMMISSIONER.

CEILING HEIGHT TABLE

SPACE	CEILING HEIGHT
SPACES WITHOUT DROP-IN CEILING	10'-11" TO 14'-0"
CORRIDORS/ELEVATOR LOBBY WITH DROP-IN CEILING	10'-0" TO 12'-0"
OFFICES WITH DROP-IN CEILING	8'-0" TO 10'-0"
COURT ROOMS WITH DROP-IN CEILING	11'-6" TO 12'-0"

DOB APPROVAL STAMP

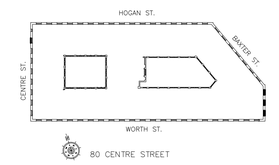
Lighting & HVAC Energy Efficiency Upgrades - Louis J. Lefkowitz Building

MEP Engineers:
SHENOY ENGINEERING, PC
39 US HWY 46 E, SUITE 802
PINEBROOK, NJ, 07058
(973)808-4090 phone
(973)808-4095 fax

Architect
CAPLES JEFFERSON
ARCH. 37-18 Northern Blvd.
Ste 319 Long Island City, NY
11101 Tel: 212.779.9772

Cost Estimate Consultant:
ELLANA INC.
32 BROADWAY, 8TH
FLOOR NEW YORK, NY
10004 TEL 212 971 0936

SITE PLAN



BLOCK: 166 LOT: 27

REVISIONS:

NUMBER	DESCRIPTION	DATE
1	ADDENDUM#3	11/18/2021
4.	**ISSUED FOR BID**	**6/23/2021**
3.	**COMPLIANCE SUBMISSION**	**3/26/2021**
2.	**100% CD SUBMISSION**	**1/26/2021**
1.	**DOB SUBMISSION**	**4/17/2020**

Department of Design and Construction

DIVISION OF PUBLIC BUILDINGS

CAPITAL PROJECT NUMBER:
E17-0001

PROJECT
Lighting & HVAC Energy Efficiency Upgrades - Louis J. Lefkowitz Building
80 Centre Street, New York, NY, 10013

FOR THE: NYC Department of Citywide Administrative Services

DRAWING TITLE:

ELECTRICAL DETAILS
SHEET - 1

DOB NOW JOB# M00345457-I1

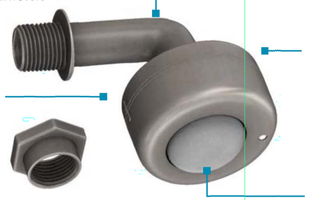
SEAL & SIGNATURE

DATE: 23 JUNE, 2021
PROJECT NO: E17-0001
DRAWN BY:
CHECKED BY:
DRAWING NUMBER:
E-701.00
CADO FILE No:

Direct Connect PIR Occupancy & Daylighting Sensor

Works with all Avi-on Fixture & Zone Controllers

Bi Level PIR Motion & Daylighting Sensor
Fully adjustable parameters



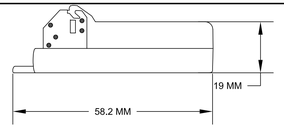
Flexible Mounting Options
- In-fixture
- Ceiling Mount
- Side Mount
- Junction Mount

Easy Connect to Avi-on Fixture & Zone Controllers
3ft and 10ft cable options are easy to install inside or outside fixture

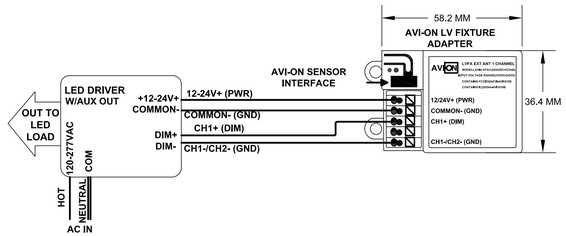
High Resolution Lens & Sensor
A single product suited for 8ft to 40ft mounting heights, warehouse, manufacturing and office

PIR OCCUPANCY & DAYLIGHT SENSOR DETAIL 1

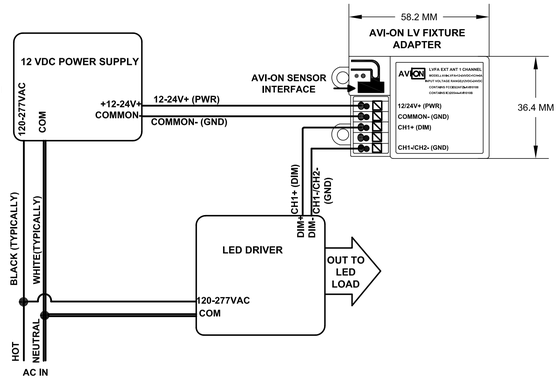
Input Voltage:	12-24VDC 17mA without a Sensor 22mA with a DC PIR Sensor 60mA with a DC Microwave Sensor	**Radio Frequency:**	2.4GHz
		Wireless Standard:	BLE 4.2 with Mesh
		Point to Point Range*:	80ft with obstructions and 350ft unobstructed
0-10V Dimming:	5mA per Channel	**Security:**	AES 128-bit encryption for device to device communication AES 256-bit encryption for device to cloud communication
Size:	2.30in x 1.43in x 0.75in (58.2mm x 36.4mm x 19mm)		
Mounting:	Removable mounting tabs		
Weight:	0.45 oz (16g)	**Warranty:**	5 years; 10 years optional
Terminal Blocks:	22-16 AWG wires	**Regulatory:**	FCC: 2AFZI-AVI1010 B IC: 20544-AVI1010 B BQB: D031801, DID: 86303
Operating Temperature:	-22F to +158F (-30C to +60C)		
Storage Temperature:	-40F to +185F (-40C to +85C)		
Humidity Rating:	95% non-condensing		
Dimensions:		*When communicating through the mesh, range is essentially unlimited (5000ft+)	



FIXTURE ADAPTER POWERED BY LED DRIVER AUXILIARY OUTPUT



FIXTURE ADAPTER CONNECTED TO LED DRIVER AND USING POWER SUPPLY



LOW VOLTAGE FIXTURE ADAPTER AND WIRING DIAGRAM 2

Direct Connect Microwave Sensor *Occupancy & Daylighting*

Works With All Avi-on Fixture & Zone Controllers

Microwave Motion & Daylighting Sensor
Fully adjustable parameters

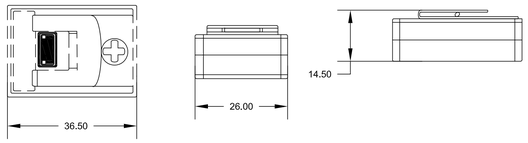
Easy to Connect to
Avi-on Fixture & Zone Controller
3ft and 10ft cable options make it easy to install inside or outside the fixture

Flexible Mounting Options
- In-fixture via magnet or bracket, behind the lens
- Acoustic tile

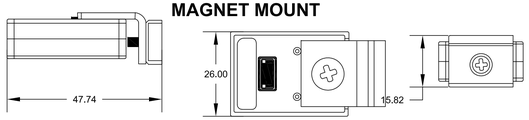
High Resolution, Low Power
- Covers office and open areas up to 15ft
- Will not trigger through floors, door, windows

DIMENSIONS

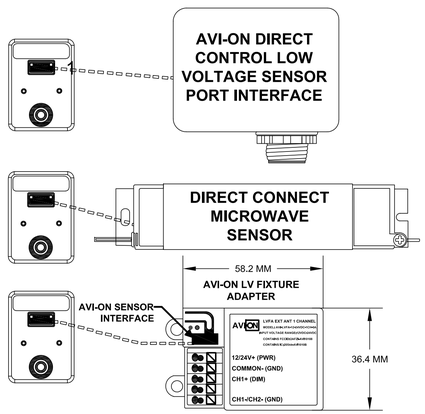
CLIP MOUNT



MAGNET MOUNT



WIRING DIAGRAMS



MICROWAVE SENSOR & WIRING DIAGRAM 3

Remote Access Bridge (RAB)

Secure Remote Access and Backup for Avi-on Bluetooth® Lighting Systems

The Avi-on Remote Access Bridge (RAB) provides secure 24/7 access to Avi-on Bluetooth Lighting Control Systems from anywhere in the world, enabling remote management of the system, visibility to current device status, and capture of energy monitoring data (requires Avi-on energy monitoring hardware), and access to Google Home and Amazon Alexa services.

Remote Access Bridge Features

Anywhere Operation
Avi-on's Remote Access Bridge enables monitoring and management of the connected Avi-on Bluetooth Lighting Control system from anywhere via the Avi-on mobile app or cloud web page.

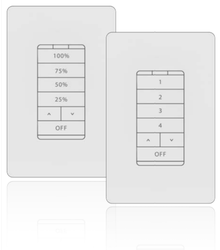
Remote firmware updates
Updates as needed are provided automatically by Avi-on without user input required.

Easy Setup
The RAB connects to the Bluetooth network just like any other Avi-on device, and connects to a local wifi or cellular hotspot (contact Avi-on for cellular version) simply by selecting the wifi network and entering the password.

Remote System Monitoring
With a RAB bridging between the Avi-on Cloud and Avi-on Bluetooth Lighting Controls, the status of all devices is reported to the cloud in real time, allowing full remote monitoring of all system components.

REMOTE ACCESS BRIDGE 4

Wall Stations



Easy, Quick Networking with Wireless Wall Stations

With AC and battery-powered options, Avi-on Wall Stations are available for new construction and retrofit needs. All controls interface to lighting fixtures and with the Avi-on App, providing a platform that supports easy-to-change grouping, scheduling, timers and scenes.

Wall Station Features

Options
- Battery powered with 10+ year battery life
- AC 110-277V version
- 4 buttons plus trim up/down and OFF
- Software configurable 4 Button Scene control and Dimming wall station configurations
- Replaceable button faces
- Fits standard Decora wall box and multi gang trim plates
- Screwless cover plate also provided

Common Specifications
- Indoor use only (spray resistant cover plate available for food service applications)
- Operating Temp: 32 to 104 °F (0 to 40 °C)
- 10+Year battery life with Replaceable Batteries
- AC version includes load line air gap disconnect for wired retrofits
- UL Listed

WALL STATION 5

DOB APPROVAL STAMP

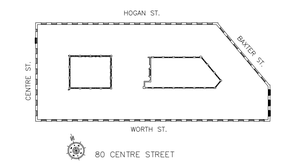
Lighting & HVAC Energy Efficiency Upgrades - Louis J. Lefkowitz Building

MEP Engineers:
SHENOY ENGINEERING, PC
39 US HWY 46 E, SUITE 802
PINEBROOK, NJ, 07058
(973)808-4090 phone
(973)808-4095 fax

Architect
CAPLES JEFFERSON
ARCH. 37-18 Northern Blvd.
Ste 319 Long Island City, NY
11101 Tel: 212.779.9772

Cost Estimate Consultant:
ELLANA INC.
32 BROADWAY, 8TH
FLOOR NEW YORK, NY
10004 TEL 212 971 0936

SITE PLAN



BLOCK: 166 LOT: 27

REVISIONS:

NUMBER	DESCRIPTION	DATE
4.	ISSUED FOR BID	6/23/2021
3.	COMPLIANCE SUBMISSION	3/26/2021
2.	100% CD SUBMISSION	1/26/2021
1.	DOB SUBMISSION	4/17/2020

Department of Design and Construction

DIVISION OF PUBLIC BUILDINGS

CAPITAL PROJECT NUMBER:
E17-0001

PROJECT
Lighting & HVAC Energy Efficiency Upgrades - Louis J. Lefkowitz Building
80 Centre Street, New York, NY, 10013

FOR THE: NYC Department of Citywide Administrative Services

DRAWING TITLE:
ELECTRICAL DETAILS SHEET-2

SEAL & SIGNATURE

DATE:	23 JUNE, 2021
PROJECT NO:	E17-0001
DRAWN BY:	
CHECKED BY:	
DRAWING NUMBER:	E-702.00
CADO FILE No:	63 OF 63

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

ADDENDA CONTROL SHEET

BID SUBMISSION DATE/ TIME: December 1, 2021; between 11:30am and 2:00pm
BID OPENING DATE/ TIME: December 1; 2:30pm

PROJECT No. : E17-0001

TITLE: Louis Lefkowitz Building Lighting & HVAC Upgrade

ADDENDA ISSUED	NO. OF DWG	DATE	APPROVED BY: ARCHITECTURE/ ENGINEERING	GENERAL COUNSEL
#1 Revised Pre-Bid Conference information; Questions from Bidders and Responses to Questions; Revisions to Documents; Revisions to PASSPort Forms		10/29/2021		
#2 Revised Bid Opening date; Questions from Bidders and Responses to Questions; Revisions to Documents; Revisions to PASSPort Forms		11/16/2021		
#3 Questions from Bidders and Responses to Questions; Revisions to Documents; Revisions to PASSPort Forms		11/19/2021		
#4 Revised Bid Opening date; Questions from Bidders Responses to Questions; and Revisions to PASSPort Forms		11/24/2021	Melissa Cato	11.24.21

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

November 24, 2021

ADDENDUM No. # 4

FOR FURNISHING ALL LABOR AND MATERIAL NECESSARY AND REQUIRED FOR:

85022B0017 – E17-0001

Louis Lefkowitz Building Lighting & HVAC Upgrade

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

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

1. **Bidders Questions and Responses to Questions:**
   See Attachment A.

2. **Revisions to Documents:**
   None.

3. **Revisions to PASSPort forms:**
   See Attachment C.

Transferring Data Between Rounds of an RFX: 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 CSB_projectinquiries@ddc.nyc.gov.

Richard Jones, PE CWI
Executive Director, Specifications

Attachment A
Addendum #4
11/24/2021

DDC PROJECT #: **E17-0001**

PROJECT NAME: **LOUIS J. LEFKOWITZ BUILDING LIGHTING & HVAC ENERGY EFFICIENCY UPGRADES**

ATTACHMENT A - BIDDERS QUESTIONS AND DDC RESPONSES

No.	Bidders Questions	DDC Responses
1	Note 2 on the E200 series of drawings states "All areas disturbed due to construction work shall be patched and painted to match existing conditions." As the majority of fixtures are ceiling mounted which will have new hardware (canopies, aircraft cable, stems) adapted and installed on existing boxes, the majority of disturbed areas will be ceilings where existing outlets boxes and canopies which have been painted over. Is the intent to include local patching and painting at the light location (about ½ sq. ft at each light) or will the bidder have to assume painting of the entire ceiling? Please advise.	Note #2 indicates that the contractor must paint the wall to the nearest corner. Since all lighting fixtures in the building are to be replaced, painting would extend to the entire ceiling where the work has been performed.
2	Please confirm the intent is to replace the existing support elements (stems) for pendant lights, and we are to provide new stem/aircraft kits for the pendant mounted fixtures.	Contractor shall provide new support elements for lighting fixtures, refer to the lighting fixture schedule for mounting type.
3	Please advise if supplemental independent dedicated supports are to be installed for recessed type lights, Type F, G, J and K.	Mounting of recessed lighting fixtures shall match existing. For recessed fixtures requiring support, anchor to the joints between the terra cotta ceiling.
4	Per discussion at the onsite walkthrough, the existing facilities engineer stated the existing structure is comprised of terracotta block and cindercrete, where traditional expansion, or powder actuated anchors may not be usable for independent support of recessed lighting fixtures. Please advise what the building standard is for anchorage of independent lighting supports where required so we may include the cost of this install in our bid.	Where required, supports shall be anchored to the joints between the terra cotta structure, refer to detail #4 on drawing E701 for more information.
5	Please advise if the 5 year warranty on the lighting fixtures and lighting controls is from the date of substantial completion or as areas of install are turned over to the client for their use.	5-year warranty shall be applicable from the time the substantial completion has been signed off.
6	At the onsite walkthrough, we visited Room 436. This room is shown to replace 1 – 8' fixture (E104A) with a Type I fixture and a Low Voltage Switch as shown on E204A. However, the existing condition in the field also had 2 – 2x4 light fixtures in addition to the 1 – 8' fixture. Is the intent to leave the existing 2x4 fixtures as is or will they be added to the project as a change order to upgrade as well? If left as is, how will they be controlled?	Refer to keynote #2 for scope of work related to the lighting controls in these rooms. Contractor is to modify the lighting control in these rooms to control both new and existing lighting fixtures.

7	Please advise source of power for HVAC/plumbing equipment shown on drawing E208.00	The power connections to HVAC units are all existing. Contractor is to reuse existing circuits to feed the new HVAC equipment as noted in the keynotes on E108 and E208. No new circuits are required.

DDC PROJECT #: E17-0001

PROJECT NAME: LOUIS J. LEFKOWITZ BUILDING LIGHTING & HVAC ENERGY EFFICIENCY UPGRADES

ATTACHMENT B – REVISIONS TO THE DOCUMENTS

None

DDC PROJECT #: **E17-0001**

PROJECT NAME: **LOUIS J. LEFKOWITZ BUILDING LIGHTING & HVAC ENERGY EFFICIENCY UPGRADES**

ATTACHMENT C – REVISIONS TO PASSPORT FORMS

This Addendum initiates Round 4 of the procurement.

Please note that numbering of addenda is independent of rounds.

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: December 8, 2021; between 11:30am and 2:00pm
BID OPENING DATE/ TIME: December 8; 2:30pm

PROJECT No. : E17-0001

TITLE: Louis Lefkowitz Building Lighting & HVAC Upgrade

ADDENDA ISSUED	NO. OF DWG	DATE	APPROVED BY: ARCHITECTURE/ ENGINEERING	GENERAL COUNSEL
#1 Revised Pre-Bid Conference information; Questions from Bidders and Responses to Questions; Revisions to Documents; Revisions to PASSPort Forms		10/29/2021		
#2 Revised Bid Opening date; Questions from Bidders and Responses to Questions; Revisions to Documents; Revisions to PASSPort Forms		11/16/2021		
#3 Questions from Bidders and Responses to Questions; Revisions to Documents; Revisions to PASSPort Forms		11/19/2021		
#4 Questions from Bidders and Responses to Questions; Revisions to Documents; Revisions to PASSPort Forms		11/24/2021		
#5 Revised Bid Opening date; Questions from Bidders Responses to Questions; and Revisions to PASSPort Forms		12/1/2021	Sarah Zomick	NA

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

December 1, 2021

ADDENDUM No. # 5

FOR FURNISHING ALL LABOR AND MATERIAL NECESSARY AND REQUIRED FOR:

85022B0017 – E17-0001

Louis Lefkowitz Building Lighting & HVAC Upgrade

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

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

1. **The Bid Opening for the contract described below scheduled for December 1, 2021, at 2:30 pm is rescheduled to December 8, 2021 at 2:30 pm.**

   Contract #1 – Electrical 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.

Transferring Data Between Rounds of an RFX: 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 CSB_projectinquiries@ddc.nyc.gov.

Richard Jones, PE CWI
Executive Director, Specifications

DDC PROJECT #: **E17-0001**

PROJECT NAME: **LOUIS J. LEFKOWITZ BUILDING LIGHTING & HVAC ENERGY EFFICIENCY UPGRADES**

ATTACHMENT A - BIDDERS QUESTIONS AND DDC RESPONSES

No.	Bidders Questions	DDC Responses
1	Currently this project is scheduled to bid on a Monday after a 4 day holiday weekend and most of our industry is not in this entire week. As such, I respectfully request a bid date postponement of at least (4) four days to Friday December 3rd in order to complete the bid package and are prepared to hand deliver it.	The Bid Opening for this project is postponed until Wednesday, December 8th.
2	As of this moment, we have no Lighting Fixture Prices so we are unable to complete our Bid. Please consider postponing the Bid Opening.	The Bid Opening for this project is postponed until Wednesday, December 8th.
3	As of today, our supplier on the drawings has still not released pricing. We would like to request an extension to Friday 12/3.	The Bid Opening for this project is postponed until Wednesday, December 8th.

DDC PROJECT #: **E17-0001**

PROJECT NAME: **LOUIS J. LEFKOWITZ BUILDING LIGHTING & HVAC ENERGY EFFICIENCY UPGRADES**

ATTACHMENT B – REVISIONS TO THE DOCUMENTS

NOT USED

DDC PROJECT #: **E17-0001**

PROJECT NAME: **LOUIS J. LEFKOWITZ BUILDING LIGHTING & HVAC ENERGY EFFICIENCY UPGRADES**

ATTACHMENT C – REVISIONS TO PASSPORT FORMS

This Addendum initiates Round 6 of the procurement.

Please note that numbering of addenda is independent of rounds.

Bid Opening Date Changes:

The Bid Opening scheduled for December 1, 2021 at 2:30pm has been rescheduled to December 8, 2021 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: December 8, 2021; between 11:30am and 2:00pm
BID OPENING DATE/ TIME: December 8; 2:30pm

PROJECT No. : E17-0001

TITLE: Louis Lefkowitz Building Lighting & HVAC Upgrade

ADDENDA ISSUED	NO. OF DWG	DATE	APPROVED BY: ARCHITECTURE/ ENGINEERING	GENERAL COUNSEL
#1 Revised Pre-Bid Conference information; Questions from Bidders and Responses to Questions; Revisions to Documents; Revisions to PASSPort Forms		10/29/2021		
#2 Revised Bid Opening date; Questions from Bidders and Responses to Questions; Revisions to Documents; Revisions to PASSPort Forms		11/16/2021		
#3 Questions from Bidders and Responses to Questions; Revisions to Documents; Revisions to PASSPort Forms		11/19/2021		
#4 Questions from Bidders and Responses to Questions; Revisions to Documents; Revisions to PASSPort Forms		11/24/2021		
#5 Revised Bid Opening date; Questions from Bidders Responses to Questions; and Revisions to PASSPort Forms		12/1/2021		
#6 Questions from Bidders and Responses to Questions; Revisions to Documents; Revisions to PASSPort Forms		12/6/2021	Melissa Cato	12.06.21

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

December 6, 2021

ADDENDUM No. # 6

FOR FURNISHING ALL LABOR AND MATERIAL NECESSARY AND REQUIRED FOR:

85022B0017 – E17-0001

Louis Lefkowitz Building Lighting & HVAC Upgrade

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

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

1. **Bidders Questions and Responses to Questions:**
   See Attachment A.

2. **Revisions to Documents:**
   See Attachment B.

3. **Revisions to PASSPort forms:**
   See Attachment C.

Transferring Data Between Rounds of an RFX: 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 CSB_projectinquiries@ddc.nyc.gov.

Richard Jones, PE CWI
Executive Director, Specifications

DDC PROJECT #: **E17-0001**

PROJECT NAME: **LOUIS LEFKOWITZ BUILDING LIGHTING & HVAC UPGRADE**

ATTACHMENT A - BIDDERS QUESTIONS AND DDC RESPONSES

No.	Bidders Questions	DDC Responses
1	Does the M/WBE requirement apply to the entire contract value or just the subcontracted value?	The M/WBE participation goal applies to the total contract value. For example, if an M/WBE participation goal was set at 30% and the contract value was $5 million, the M/WBE goal dollar amount that a vendor would have to meet would be $1.5 million. There are three ways to meet an M/WBE participation goal requirement: 1. The prime vendor is an NYC Department of Small Business (SBS) certified M/WBE. 2. Qualified M/WBE Joint Venture (MWBE partner must have 25%+ shared ownership). *A "Qualified Joint Venture" is a joint venture between one or more MBEs, WBEs, and another company, in which the percentage of profit or loss to which the certified firm or firms is entitled or exposed for participation in the contract, as set forth in the joint venture agreement, is at least 25% of the total profit or loss. 3. The prime vendor utilizes NYC SBS certified M/WBE subcontractors.
2	What level of bid breakdown is meant to be submitted with bid?	Bid Breakdown must be filled out completely.
3	We were just made aware that the planholder list has inaccurate contact information- our correct vendor contact in Passport is alex@miladcontracting.com. Please correct the planholder list.	See Attachment B for updated Planholders list.

DDC PROJECT #: **E17-0001**

PROJECT NAME: **LOUIS LEFKOWITZ BUILDING LIGHTING & HVAC UPGRADE**

ATTACHMENT B – REVISIONS TO THE DOCUMENTS

Updated Planholders List is included with this Addendum

DDC PROJECT #: **E17-0001**

PROJECT NAME: **LOUIS LEFKOWITZ BUILDING LIGHTING & HVAC UPGRADE**

ATTACHMENT C – REVISIONS TO PASSPORT FORMS

This Addendum initiates Round 7 of the procurement.

Please note that numbering of addenda is independent of rounds.

Questionnaire Changes:

None

Item Grid Changes:

None

Department of Design and Construction

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

ADDENDUM TO THE GENERAL CONDITIONS FOR SINGLE CONTRACT PROJECTS

The General Conditions are hereby amended in accordance with the terms and conditions set forth in this Addendum.

I. PROJECT DESCRIPTION

FMS #: E17-0001

PROJECT NAME: Lighting & HVAC Energy Efficiency Upgrades at the Louis J. Lefkowitz Building

PROJECT DESCRIPTION: This Project consists of energy efficiency upgrades throughout the building to reduce energy consumption and greenhouse gas emissions, where the scope of work includes existing pump and fan motor replacement with premium efficiency motors, building-wide lighting fixture replacement with LED fixtures with new occupancy sensors, a new steam condensate recovery system for building domestic hot water system. Print shop air conditioning system scope includes a new Building Management System. The scope of work includes system testing, adjusting and balancing.

PROJECT LOCATION: 80 Centre Street
BOROUGH: New York
CITY OF NEW YORK
ZIP CODE: 10013
COMMUNITY BOARD #: Manhattan 1 Community Board

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*** Commissioning Requirements.

The General Commissioning Requirements for MEP Systems are found in Section 01 9113 of the DDC Standard General Conditions.

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.

Section	Sub-Section	Sub-Section	Applies	Does not Apply	Applies as Amended
01 1000	1.4 (B)	Scope and Intent / LEED		X	
	1.4(C)	Scope and Intent / Commissioning	X		
01 3216.10		Project Schedules (Method A)		X	
01 3216.20		Project Schedules (Method B)	X		
01 3216.30		Project Schedules (Method C)		X	
	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	X		
01 3506	3.2 (A-B)	Electrical Conduit System Including Boxes (Pull, Junction and Outlet)	X		
	3.3 (A-E)	Electrical Wiring Devices	X		
	3.4 (A-I)	Electrical Conductors and Terminations	X		
	3.5 (A-B)	Circuit Protective Devices	X		
	3.6 (A-J)	Distribution Centers		X	
	3.7 (A-I)	Motors	X		
	3.8 (A-I)	Motor Control Equipment	X		
01 3591		Historic Treatment Procedures	X		
01 5000	3.2 (A)	Temporary Water Facilities / Temporary Water		X	
	3.2 (B)	Temporary Water Facilities / Temporary Water – Work in Existing Facilities	X		
	3.3 (B)	Temporary Sanitary Facilities / Self-Contained Toilet Units		X	
	3.3 (C)	Temporary Sanitary Facilities / Existing Toilets		X	
	3.4 (B) 1	Temporary Power, Lighting, and Site Lighting / Connection to Utility Lines		X	
	3.4 (B) 2	Temporary Power, Lighting, and Site Lighting / Connection to Existing Electrical Power Service	X		
	3.4 (B) 3	Temporary Power, Lighting, and Site Lighting / Electrical Generator Power Service		X	
	3.4 (D)	Temporary Power, Lighting, and Site Lighting / Temporary Lighting	X		
	3.4 (E)	Temporary Power, Lighting, and Site Lighting / Site Security Lighting (for New Construction Only)	X		
	3.5 (A-J)	Temporary Heat		X	
	3.8 (A)	DDC Field Office / Office Space in Existing Building	X		

Section	Sub-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			X		
	3.17(B)	Project Rendering			X		
	3.18 (A-C)	Security Guards / Fire Guards on Site			X		
01 5411	3.1 (A-J)	Temporary Use, Operation and Maintenance of Elevators During Construction for New Buildings Up To and Including 15 Stories			X		
	3.2 (A-M)	Temporary Use, Operation and Maintenance of Elevators During Construction for New Buildings Over 15 Stories			X		
	3.3 (A-E)	Temporary Use, Operation and Maintenance of Elevators During Construction for Existing Buildings	X				
01 7300	3.3 (A-I)	Surveys			X		
	3.4 (A-B)	Borings			X		
	3.12 (A-D)	Sleeves and Hangers			X		
	3.13 (A)	Sleeve and Penetration Drawings			X		
	3.15 (A)	Location of Partitions			X		
01 7419	1.5 (C)	Waste Management Performance Requirements / LEED Certification			X		
01 7900		Demonstration and Owner's Pre-Acceptance Orientation	X				
01 8113.03		Sustainable Design Requirements for LEED v3 Buildings			X		
01 8113.04		Sustainable Design Requirements for LEED v4 Buildings			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			X		
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.

01 8113.10	Environmentally Preferable Purchasing (EPP) Compliance

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) Owner: Wherever the term “Owner” is used in the Specifications and/or the Contract Drawings, such term shall mean the City of New York.

(2) Other Entities: In the event any entity other than the City of New York is referred to or named as the “Owner” in the Specifications and/or the Contract Drawings, the name of such other entity is deemed deleted and replaced with the “City of New York”.

(3) Architect / Engineer: Wherever the words “Architect”, “Engineer”, “Architect / Engineer” or “Architect and/or Engineer” are used in the Specifications and/or the Contract Drawings, such words are deemed deleted and replaced with the word “Commissioner”.

(4) Products / Manufacturers: Wherever the Specifications and/or the Contract Drawings require the Contractor to provide a particular product (i.e., material and/or equipment) from a designated manufacturer and/or vendor, the term “or approved equal” is deemed inserted, even if only one product and/or manufacturer is specified, except as otherwise provided below.

(a) Proprietary Items: If the 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) Special Experience Requirements: Special Experience Requirements for the Project, if any, are set forth in the PASSPort Questionnaire. Special Experience Requirements may apply to Contractors, subcontractors, installers, manufacturers and/or suppliers. If the Specifications and/or the Contract Drawings contain any Special Experience Requirement that is not set forth in the 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, except as described in paragraph (b) below.
(b) Any Special Experience Requirement that pertains to the abatement of hazardous materials shall not be subject to the deletion and/or revision set forth above. Such Special Experience Requirement shall remain in full force and effect.
(c) Any Special Experience Requirement that provides that the entity performing the work must be licensed, authorized, certified, approved by or acceptable to the manufacturer, is deemed deleted and replaced with the requirement that such entity must be properly trained for the specified work.
(d) Any Special Experience Requirement that provides that the individual workers performing the work must be licensed, authorized, certified, approved by or acceptable to the manufacturer, is deemed deleted and replaced with the requirement that such individual workers must be properly trained for the specified work.

(6) Alternate Bids: If the agency is requesting the submission of Alternate Bids, a Notice regarding such Alternate Bids is set forth in the 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) Contractor Retained Engineer: If the Specifications and/or the Contract Drawings require the Contractor to retain an Engineer to provide engineering services for the Project, the following sentence is deemed inserted: “Such Engineer must be a Professional Engineer, licensed in the State of New York.”

(8) LEED Related Provisions: If the Specifications and/or the Contract Drawings require the Contractor to purchase FSC certified wood, rapidly renewable materials, or materials within 500 miles (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) Guarantees: Requirements for Guarantees and Maintenance are set forth in Schedule B, which is included in the Addendum to the General Conditions. In the event of any conflict or inconsistency between (1) a guarantee and/or maintenance requirement set forth in the Specifications and/or the Contract Drawings and (2) a guarantee and/or maintenance requirement set forth in Schedule B, the guarantee and/or maintenance requirement set forth in Schedule B shall prevail.

(10) Warranties: Requirements for Warranties are set forth in Schedule B, which is included in the Addendum to the General Conditions.

(a) 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) Exculpatory Provisions: In the event the Specifications and/or the Contract Drawings contain any provision whereby the consultant and/or any of its officers, employees or agents, including subconsultants, is absolved of responsibility for any act or omission, such provision is deemed deleted.

(12) Insurance: Provisions regarding insurance coverage the Contractor is required to provide are set forth in Article 22 of the City of New York Standard Construction Contract and Schedule A, which is included in the Addendum to the General Conditions. In the event the Specifications and/or the Contract Drawings contain any provision regarding insurance requirements, such provision is deemed deleted.

(13) Indemnification: Provisions regarding indemnification are set forth in Articles 7, 12, 22 and 57 of the City of New York Standard Construction Contract. In the event the Specifications and/or the Contract Drawings contain any provision regarding indemnification, such provision is deemed deleted.

(14) Dispute Resolution: Provisions regarding dispute resolution are set forth in Article 27 of the City of New York Standard Construction Contract. In the event the Specifications and/or the Contract Drawings contain any provision regarding dispute resolution, such provision is deemed deleted.

(15) Payment to Other Entities: In the event the Specifications and/or the Contract Drawings contain any provision which requires the Contractor to make payments to an entity other than a subcontractor and/or supplier providing services and/or material for the project, such provision is deemed deleted.

(16) General Conditions: In the event of any conflict or inconsistency between (1) the Specifications and/or the Contract Drawings and (2) the General Conditions, the General Conditions shall prevail.

(17) Standard Construction Contract: In the event of any conflict or inconsistency between (1) the Specifications and/or the Contract Drawings and (2) the City of New York Standard Construction Contract, the City of New York Standard Construction Contract shall prevail.

SCHEDULE A (FOR PUBLICLY BID PROJECTS)
PART I - Contract Requirements

Various Articles of the Contract refer to requirements which are set forth in Schedule A of the General Conditions. The Schedule set forth below specifies the following: (1) the referenced Articles of the Contract, and (2) the specific requirements applicable to the contract.

REFERENCE	ITEM	REQUIREMENTS	CONTRACT #1
Information For Bidders	Bid Security	The Contractor must obtain a bid security in the amount indicated to the right.	Required provided the TOTAL BID PRICE set forth on the Bid Form is $1,000,000. or more. Certified Check: 2% of Bid Amount or Bond: 10% of Bid Amount
Information For Bidders	Performance and Payment Bonds		For Contracts in the amount of $1,000,000.00 or more, Performance and Payment Bonds must each be in amount equal to 100% of the Contract 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 Manager
Article 14 Contract	Time of Substantial Completion	Consecutive Calendar Days	**730 CCDS**
Article 15 Contract	Liquidated Damages	For each consecutive calendar day over completion time	**$600**
Article 17 Contract	Sub-Contracts	Not to exceed Percent of Contract Price	**60%**
Article 21 Contract	Retainage	Percent of Voucher	If 100% bonds are required **5%** If 100% bonds are not required, and Contract Price is $1,000,000 or less **5%** If 100% bonds are not required, and Contract Price is more than $1,000,000 **10%**
Article 24 Contract	Deposit Guarantee	Percent of Contract Price	**1%**
Article 24 Contract	Period of Guarantee		See Schedule B of the Addendum to the General Conditions
Article 74 Contract	Statement of Work		Addenda, numbered: _____
Article 75 Contract	Compensation to be Paid to Contractor		Amount for which the Contract was Awarded: _____ _____ Dollars ($_____)
Article 79 Contract	MWBE Program		See M/WBE Utilization Plan in the PASSPort Procurement M/WBE Considerations Section.

SCHEDULE A (FOR PUBLICLY BID PROJECTS)

Relating to Article 22 - Insurance

PART II. Types of Insurance, Minimum Limits and Special Conditions

Note: All certificate(s) of insurance submitted pursuant to Contract Article 22.3. 3 must be accompanied by a Certification by Broker consistent with Part III below and include the following information:

- **For each insurance policy, the name and NAIC number of issuing company, number of policy, and effective dates;**
- **Policy limits consistent with the requirements listed below;**
- **Additional insureds or loss payees consistent with the requirements listed below; and**
- **The number assigned to the Contract by the City (in the "Description of Operations" field).**

Insurance indicated by a blackened box (■) or by (X) in the ☐ to left will be required under this contract.

Types of Insurance (per Article 22 in its entirety, including listed paragraph)	Minimum Limits and Special Conditions
■ 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). CGL policies that include endorsements that add exclusions to ISO Form CG 00 01 do not comply with the Contract. The Department may, in its sole discretion, accept endorsements that add exclusions, but the Department will generally reject endorsements that add exclusions that exempt all or part of the Work of the Project. For example, if the Project includes Work on a roof of a four-story building, the Department will reject a CGL policy that includes a "Three Story Height Limitation Endorsement." The minimum limits shall be $1,000,000.00 per occurrence and $2,000,000.00 per project aggregate applicable to this **Contract.** 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).

SCHEDULE A (FOR PUBLICLY BID PROJECTS)

Relating to Article 22 - Insurance

PART II. Types of Insurance, Minimum Limits and Special Conditions

Insurance indicated by a blackened box (■) or by (X) in the ☐ to left will be required under this contract.

Types of Insurance (per Article 22 in its entirety, including listed paragraph)	Minimum Limits and Special Conditions
■ Workers' Compensation Art. 22.1.2 ■ Disability Benefits Insurance Art. 22.1.2 ■ Employers' Liability Art. 22.1.2 □ Jones Act Art. 22.1.3 □ U.S. Longshoremen's and Harbor Workers Compensation Act Art. 22.1.3	Workers' Compensation, Employers' Liability, and Disability Benefits Insurance: Statutory per New York State law without regard to jurisdiction. **Note**: The following forms are acceptable: (1) New York State Workers' Compensation Board Form No. C-105.2, (2) State Insurance Fund Form No. U-26.3, (3) New York State Workers' Compensation Board Form No. DB-120.1 and (3) Request for WC/DB Exemption Form No. CE-200. The City will not accept an ACORD form as proof of Workers' Compensation or Disability Insurance. 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

SCHEDULE A (FOR PUBLICLY BID PROJECTS)

Relating to Article 22 - Insurance

PART II. Types of Insurance, Minimum Limits and Special Conditions

Insurance indicated by a blackened box (■) or by (X) in the ☐ to left will be required under this contract.

Types of Insurance (per Article 22 in its entirety, including listed paragraph)	Minimum Limits and Special Conditions
□ Contractor's Pollution Liability Art. 22.1.6	$_____ per occurrence $_____ aggregate Additional Insureds: 1. City of New York, including its officials and employees, and 2. _____ 3. _____
□ Marine Protection and Indemnity Art. 22.1.7(a)	$_____ per occurrence $_____ aggregate Additional Insureds: 1. City of New York, including its officials and employees, and 2. _____ 3. _____
□ Hull and Machinery Insurance Art. 22.1.7(b)	$_____ per occurrence $_____ aggregate Additional Insureds: 1. City of New York, including its officials and employees, and 2. _____ 3. _____
□ Marine Pollution Liability Art. 22.1.7(c)	$_____ each occurrence Additional Insureds: 1. City of New York, including its officials and employees, and 2. _____ 3. _____
[OTHER] Art. 22.1.8 □ Ship Repairers Legal Liability	$_____ each occurrence

SCHEDULE A (FOR PUBLICLY BID PROJECTS)

Relating to Article 22 - Insurance

PART II. Types of Insurance, Minimum Limits and Special Conditions (Continued)

Insurance indicated by a blackened box (■) or by (X) in the ☐ to left will be required under this contract.

Types of Insurance (per Article 22 in its entirety, including listed paragraph)	Minimum Limits and Special Conditions
[OTHER] Art. 22.1.8 □ Collision Liability/Towers Liability	$_____ per occurrence $_____ aggregate Additional Insureds: 1. City of New York, including its officials and employees, and 2. _____ 3. _____
[OTHER] Art. 22.1.8 □ Railroad Protective Liability _____	$_____ per occurrence $_____ aggregate Additional Insureds: 1. City of New York, including its officials and employees, and 2. _____ 3. _____
[OTHER] Art. 22.1.8 □ Asbestos Liability _____	Only required of the Contractor or Subcontractor performing any required asbestos removal. $1,000,000 each occurrence, $2,000,000 aggregate (Combined Single Limit); only required of the Contractor or Subcontractor performing any required asbestos removal. Additional Insureds: 1. City of New York, including its officials and employees, and

SCHEDULE A (FOR PUBLICLY BID PROJECTS)

Relating to Article 22 - Insurance

PART II. Types of Insurance, Minimum Limits and Special Conditions (Continued)

Insurance indicated by a blackened box (■) or by (X) in the ☐ to left will be required under this contract.

[OTHER] Art. 22.1.8 □ Boiler Insurance_____	 $200,000
[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.	$1,000,000 per occurrence The Contractor's Professional Engineer shall maintain and submit evidence of Professional Liability Insurance in the minimum amount of $1,000,000 per claim. The policy or policies shall include an endorsement to cover the liability assumed by the Contractor under this Agreement arising out of the negligent performance of professional services or caused by an error, omission or negligent act of the Contractor's Professional Engineer or anyone employed by the Contractor's Professional Engineer. Claims-made policies will be accepted for Professional Liability Insurance. All such policies shall have an extended reporting period option or automatic coverage of not less than two (2) years. If available as an option, the Contractor's Professional Engineer shall purchase extended reporting period coverage effective on cancellation or termination of such insurance unless a new policy is secured with a retroactive date, including at least the last policy year.

SCHEDULE A (FOR PUBLICLY BID PROJECTS)

Relating to Article 22 - Insurance

PART III. Certificates of Insurance

All certificates of insurance (except certificates of insurance solely evidencing Workers' Compensation Insurance, Employer's Liability Insurance, and/or Disability Benefits Insurance) must be accompanied by one of the following:

(1) the Certification by Insurance Broker or Agent on the following page setting forth the required information and signatures;

-- OR --

(2) copies of all policies as certified by an authorized representative of the issuing insurance carrier that are referenced in such certificate of insurance. If any policy is not available at the time of submission, certified binders may be submitted until such time as the policy is available, at which time a certified copy of the policy shall be submitted.

SCHEDULE A (FOR PUBLICLY BID PROJECTS)

Relating to Article 22 - Insurance

PART III. Certification by Insurance Broker or Agent

The undersigned insurance broker or agent represents to the City of New York that the attached Certificate of Insurance is accurate in all material respects.

_____

[Name of broker or agent (typewritten)]

_____

[Address of broker or agent (typewritten)]

_____

[Email address of broker or agent (typewritten)]

_____

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

_____

[Signature of authorized official or broker or agent]

_____

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

State of ……...)
) ss:
County of ……)

Sworn to before me this

_____ day of _____, 20__

_____

NOTARY PUBLIC FOR THE STATE OF_____

SCHEDULE A (FOR PUBLICLY BID PROJECTS)

Relating to Article 22 - Insurance

PART IV. Address of Commissioner

Wherever reference is made in Article 7 or Article 22 to documents to be sent to the **Commissioner** (e.g., notices, filings, or submissions), such documents shall be sent to the address set forth below or, in the absence of such address, to the **Commissioner's** address as provided elsewhere in this **Contract**.

ACCO's Office, Insurance Unit

30-30 Thomson Avenue, 4th Floor

Long Island City, New York 11101

SCHEDULE B

Guarantees and Warranties

(Reference: Section 01 7839, Article 2.7 of the DDC Standard General Conditions)

GUARANTY FROM CONTRACTOR

(1) Contractor's Guaranty Obligation: The Contractor shall promptly repair, replace, restore or rebuild, as the Commissioner may determine, any finished Work in which defects of materials or workmanship may appear or to which damage may occur because of such defects, during the one (1) year period subsequent to the date of Substantial Completion (or use and occupancy in accordance with the Contract), except for the areas of Work set forth below:

- Roofing, Waterproofing, and Joint Sealant Work. For these types of work, the guarantee period shall be (2) two years.

- Trees and/or Plant Material. For trees and/or plant material furnished and installed, the guarantee period shall be (2) two years. During the guarantee period, the Contractor shall provide all maintenance services set forth in the Specifications.

(2) Guaranty Period: The obligation of the Contractor, and its Surety under the Performance Bond, is limited to the period(s) of time specified above.

(3) Other Provisions Deemed Deleted: In the event the Specifications and/or the Contract Drawings contain any provisions regarding guaranty requirements, such provisions are deemed deleted and replaced with the guaranty requirements set forth in this Schedule B.

****

WARRANTY FROM MANUFACTURER

(1) Contractor's Obligation to Provide Warranties: The items of material and/or equipment for which manufacturer warranties are required are listed below. For each item of material and/or equipment listed below, the Contractor shall obtain a written warranty from the manufacturer. Such warranty shall provide that the material or equipment is free from defects for the period set forth below and will be replaced or repaired within such specified period. The Contractor shall deliver all required warranties to the Commissioner.

(2) Required Warranties:

Specification Number	Material or Equipment	Warranty Period
22 11 23	Pumps and motors	2 Years
23 05 13	Motors and starters	2 Years
23 09 00	BMS Controllers	2 Years
23 22 23	Vacuum pump	2 Years
23 57 00	Heat exchanger	2 Years
26 09 23	Lighting Controls	5 Years
26 51 00	Interior Lighting	5 Years
26 29 23	VFD Motor Controllers	5 Years

(3) Application: The obligations under the warranty for the periods specified above shall apply only to the manufacturer of the material or equipment, and not to the Contractor or its Surety; provided, however, the Contractor retains responsibility for obtaining all required warranties from the manufacturers and delivering the same to the Commissioner.

(4) Other Provisions: The warranty requirements set forth in this Schedule B are also included in the Specifications.

(a) In the event of any conflict between a warranty requirement set forth in the Specifications and a warranty requirement set forth in Schedule B, the warranty requirement set forth in Schedule B shall take precedence.

(b) In the event a warranty requirement set forth in the Specifications is omitted from Schedule B, such omission from Schedule B shall have no effect and the Contractor's obligation to provide the manufacturer's warranty, as set forth in the Specifications, shall remain in full force and effect.

(c) In the event a warranty requirement for a particular item of material or equipment is omitted from both Schedule B and the Specifications, and the manufacturer of such item actually provides a warranty, the Contractor shall be obligated to obtain and deliver to the Commissioner the highest level of warranty actually provided by that manufacturer.

(d) In the event a warranty requirement is provided for a particular item of material or equipment, and such requirement specifies a warranty period that is longer than that which is actually provided by any of the specified manufacturers, the Contractor shall be obligated to obtain and deliver to the Commissioner the highest level of warranty actually provided by any of the specified manufacturers, unless otherwise directed in writing by the Commissioner.

(e) Unless indicated otherwise Warranties are to take effect on the date of Substantial Completion.

SCHEDULE C

Contract Drawings

(Reference: Section 01 1000, Article 1.5 (A) of the DDC Standard General Conditions)

The Schedule set forth below lists all Contract Drawings for the Project.

G001.00	COVER SHEET
G002.00	LEGEND, ABBREVIATIONS & GENERAL NOTES
EN-001.00	NYCECC ENERGY COMPLIANCE-1
EN-002.00	NYCECC ENERGY COMPLIANCE -2
EN-003.00	NYCECC ENERGY COMPLIANCE -3
M-001.00	GENERAL NOTES, SYMBOLS AND ABBREVIATIONS
M-002.00	MECHANICAL SCHEDULES - 1
M-003.00	MECHANICAL SCHEDULES - 2
M-004.00	MECHANICAL SCHEDULES - 3
M-100.00	MECHANICAL BASEMENT PART PLAN - 1
M-101.00	MECHANICAL BASEMENT PART PLAN - 2
M-102.00	MECHANICAL BASEMENT PART PLAN - 3
M-103.00	MECHANICAL NINTH FLOOR PART PLAN
M-104.00	MECHANICAL PART PLANS - TOILETS
M-200.00	MECHANICAL BASEMENT PART PLAN - 4
M-300.00	MECHANICAL RISER DIAGRAM - 1
M-301.00	MECHANICAL RISER DIAGRAMS - 2
M-400.00	MECHANICAL CONTROL DIAGRAMS - 1
M-401.00	MECHANICAL CONTROL DIAGRAMS - 2
M-402.00	MECHANICAL CONTROL DIAGRAMS - 3
M-500.00	MECHANICAL DETAILS SHEET-1
P-001.00	PLUMBING GENERAL NOTES, ABBREVIATIONS AND SYMBOLS LIST
P-061.00	PLUMBING DEMOLITION PART PLAN - BASEMENT
P-101.00	PLUMBING BASEMENT PART PLAN
P-301.00	PLUMBING RISERS
P-401.00	PLUMBING DETAILS
E-001.00	GENERAL NOTES, ABBREVIATIONS, AND ELECTRICAL SYMBOL LIST
E-100A.00	BASEMENT FLOOR ELECTRICAL LIGHTING DEMOLITION PLAN - WEST
E-100B.00	BASEMENT FLOOR ELECTRICAL LIGHTING DEMOLITION PLAN - EAST
E-101A.00	FIRST FLOOR ELECTRICAL LIGHTING DEMOLITION PLAN - WEST
E-101B.00	FIRST FLOOR ELECTRICAL LIGHTING DEMOLITION PLAN - EAST
E-102A.00	SECOND FLOOR ELECTRICAL LIGHTING DEMOLITION PLAN - WEST
E-102B.00	SECOND FLOOR ELECTRICAL LIGHTING DEMOLITION PLAN - EAST
E-103A.00	THIRD FLOOR ELECTRICAL LIGHTING DEMOLITION PLAN - WEST
E-103B.00	THIRD FLOOR ELECTRICAL LIGHTING DEMOLITION PLAN - EAST
E-104A.00	FOURTH FLOOR ELECTRICAL LIGHTING DEMOLITION PLAN - WEST
E-104B.00	FOURTH FLOOR ELECTRICAL LIGHTING DEMOLITION PLAN - EAST
E-105A.00	FIFTH FLOOR ELECTRICAL LIGHTING DEMOLITION PLAN - WEST
E-105B.00	FIFTH FLOOR ELECTRICAL LIGHTING DEMOLITION PLAN - EAST
E-106A.00	SIXTH FLOOR ELECTRICAL LIGHTING DEMOLITION PLAN - WEST

E-106B.00	SIXTH FLOOR ELECTRICAL LIGHTING DEMOLITION PLAN - EAST
E-107A.00	EIGHTH FLOOR ELECTRICAL LIGHTING DEMOLITION PLAN - WEST
E-107B.00	EIGHTH FLOOR ELECTRICAL LIGHTING DEMOLITION PLAN - EAST
E-108.00	ELECTRICAL DEMOLITION PART PLANS - BASEMENT AND NINTH FLOOR
E-200A.00	BASEMENT FLOOR ELECTRICAL LIGHTING PLAN - WEST
E-200B.00	BASEMENT FLOOR ELECTRICAL LIGHTING PLAN - EAST
E-201A.00	FIRST FLOOR ELECTRICAL LIGHTING PLAN - WEST
E-201B.00	FIRST FLOOR ELECTRICAL LIGHTING PLAN - EAST
E-202A.00	SECOND FLOOR ELECTRICAL LIGHTING PLAN - WEST
E-202B.00	SECOND FLOOR ELECTRICAL LIGHTING PLAN - EAST
E-203A.00	THIRD FLOOR ELECTRICAL LIGHTING PLAN - WEST
E-203B.00	THIRD FLOOR ELECTRICAL LIGHTING PLAN - EAST
E-204A.00	FOURTH FLOOR ELECTRICAL LIGHTING PLAN - WEST
E-204B.00	FOURTH FLOOR ELECTRICAL LIGHTING PLAN - EAST
E-205A.00	FIFTH FLOOR ELECTRICAL LIGHTING PLAN - WEST
E-205B.00	FIFTH FLOOR ELECTRICAL LIGHTING PLAN - EAST
E-206A.00	SIXTH FLOOR ELECTRICAL LIGHTING PLAN - WEST
E-206B.00	SIXTH FLOOR ELECTRICAL LIGHTING PLAN - EAST
E-207A.00	EIGHTH FLOOR ELECTRICAL LIGHTING PLAN - WEST
E-207B.00	EIGHTH FLOOR ELECTRICAL LIGHTING PLAN - EAST
E-208.00	ELECTRICAL NEW WORK PART PLANS - BASEMENT AND NINTH FLOOR
E-701.00	ELECTRICAL DETAILS SHEET - 1
E-702.00	ELECTRICAL DETAILS SHEET - 2

SCHEDULE D

Electrical Motor Control Equipment

(Reference: 01 3506, Article 3.8 of the DDC Standard General Conditions)

Requirements for electrical motor equipment may be included in one or more sections of the Specifications for the Contract for the Project. Schedule D set forth below delineates specific information for electrical motor control equipment. In the event of any conflict between the Specifications and this Schedule D, Schedule D shall take precedence; provided, however, in the event of an omission from Schedule D (i.e., Schedule D omits either a reference to or information concerning electrical motor equipment which is set forth in the Specifications), such omission from Schedule D shall have no effect and the Contractor's obligation with respect to the electrical motor control equipment, as set forth in the Specifications, shall remain in full force and effect.

DB Disconnect Circuit Breaker (Switch)
TS Thermal Switch
MS Magnetic Starter
CMS Comb. Mag. Starter
P Pilot Light
F Firestat
T Thermostat
AL Alternator
BG Break Glass Station
HOA Hand-Off Auto.
PB Push Button Station
RO Remote "off"

Equip. Ident.	Location	# of Units	HP or KW	Volts and Phase	Control Type: See legend above	Remarks:
AHU-PS-1	Basement Mechanical Room	1	7.5HP	208 /3	Variable Speed Drive (HOA)	
EF-1 & EF-2	9th Floor Fan Room	2	5HP	208 /3	Variable Speed Drive (HOA)	
CW-HP-1	Basement Mechanical Room	3	15HP	208 /3	Variable Speed Drive (HOA)	

SCHEDULE E

Separation of Trades

NOT USED FOR SINGLE CONTRACTS

TABLE OF CONTENTS

DIVISION 26 - ELECTRICAL

END OF TABLE OF CONTENTS

CONTRACT # 1

ELECTRICAL WORK

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SECTION 018113.10
ENVIRONMENTALLY PREFERABLE PURCHASING (EPP) COMPLIANCE

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
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 Preferable Purchasing (EPP) Minimum Standards for Construction Products	The standard that refers to a list of equipment, materials and products that may be specified in construction contracts covered by the EPP laws and provides the applicable minimum standards referenced in the laws. 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:

1. 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.
2. 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 lacquers	275
Clear Wood Coating – Sanding Sealers (Other than Lacquers)	275
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 Varnishes	725
Clear Wood Coating – Lacquers (Including Lacquer Sanding Sealers)	550

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 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 Undercoaters	350
Stains	250
Swimming Pool Coatings and Swimming Pool Repair and Maintenance Coatings	340
Thermoplastic Rubber Coatings and Mastics	550
Waterproofing Concrete / Masonry Sealers	400
Waterproofing Sealers	250
Wood Preservatives	350

c. The products listed below shall be recovered material and comply with the Post-consumer 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:

Type	**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
>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 Compound	**24-Hour Testing Maximum Emission Factor (µg/m2•hr)**	**14-Day Testing Maximum Emission Factor (µg/m2•hr)**
Formaldehyde	50	31
2-ethyl-1-hexanol	300	300
Total Volatile Organic Compounds	800	N/A
Carpet Cushions		

Volatile Organic Compound	24-Hour Testing Maximum Emission Factor (µg/m2•hr)	14-Day Testing Maximum Emission Factor (µg/m2•hr)
Butylated Hydroxytoluene	300	N/A
Formaldehyde	50	N/A
4-Phenylcyclohexene (4PCH)	50	N/A
Total Volatile Organic Compounds	1000	N/A
Carpets		
Volatile Organic Compound	**24-Hour Testing Maximum Emission Factor (µg/m2•hr)**	**14-Day Testing Maximum Emission Factor (µg/m2•hr)**
Formaldehyde	50	30
4-Phenylcyclohexene	50	17
Styrene	410	410
Total Volatile Organic Compounds	500	N/A

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-consumer Content (%)**	**Total Recovered Materials Content (%)**
Old Carpet Cushion	15-50	15-50
Carpet Cushion – Jute		
Material	**Recovered Post-consumer Content (%)**	**Total Recovered Materials Content (%)**
Burlap	40	40
Carpet Cushion – Rubber		
Material	**Recovered Post-consumer Content (%)**	**Total Recovered 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-consumer Content (%)**	**Total Recovered 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 material (dry weight basis)
Channelizers		
Material	**Recovered Post-consumer Content (%)**	**Total Recovered Materials Content (%)**
Plastic	25-90	No Range Recommended
Rubber (base only)	100	No Range Recommended
Delineators – Fixed		
Material	**Recovered Post-consumer Content (%)**	**Total Recovered 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-consumer Content (%)**	**Total Recovered Materials Content (%)**
Plastic PET	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-consumer Content (%)**	**Total Recovered Materials Content (%)**
Post-consumer Paper	75	75
Insulation - Foam-In-Place		
Material	**Recovered Post-consumer Content (%)**	**Total Recovered Materials Content (%)**
Recovered Material	No Range Recommended	5
Insulation - Glass Fiber Reinforced		
Material	**Recovered Post-consumer Content (%)**	**Total Recovered Materials Content (%)**
Recovered Material	No Range Recommended	6
Insulation - Laminated Paperboard		
Material	**Recovered Post-consumer Content (%)**	**Total Recovered Materials Content (%)**
Post-consumer Paper	100	100
Insulation - Perlite Composition Board		
Material	**Recovered Post-consumer Content (%)**	**Total Recovered Materials Content (%)**
Post-consumer Paper	23	23

Insulation - Phenolic Rigid Foam		
Material	**Recovered Post-consumer Content (%)**	**Total Recovered Materials Content (%)**
Recovered Material	No Range Recommended	5
Insulation - Plastic, Non-woven Batt		
Material	**Recovered Post-consumer Content (%)**	**Total Recovered Materials Content (%)**
Recovered and/or Post-consumer Plastic	No Range Recommended	100
Insulation - Plastic Rigid Foam, Polyisocyanurate/Polyurethane: Rigid Foam		
Material	**Recovered Post-consumer Content (%)**	**Total Recovered Materials Content (%)**
Recovered Material	No Range Recommended	9
Insulation - Structural Fiberboard		
Material	**Recovered Post-consumer Content (%)**	**Total Recovered Materials Content (%)**
Recovered Material	No Range Recommended	80-100
Modular Threshold Ramps		
Material	**Recovered Post-consumer Content (%)**	**Total Recovered Materials Content (%)**
Steel (BOF)	16	25-30
Steel (EAF)	67	100
Aluminum	No Range Recommended	10
Rubber	100	100
Nonpressure Pipe		
Material	**Recovered Post-consumer Content (%)**	**Total Recovered 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-consumer Content (%)**	**Total Recovered Materials Content (%)**
Plastic	90-100	100
Plastic Composite	50-75	95-100
Steel (BOF)	16	95
Steel (EAF)	50-100	95-100
Restroom Dividers/Partitions, Steel		
Material	**Recovered Post-consumer Content (%)**	**Total Recovered Materials Content (%)**
Steel (from BOF)	16	25-30
Steel (from EAF)	67	100
Roofing Materials		
Material	**Recovered Post-consumer Content (%)**	**Total Recovered Materials Content (%)**
Steel (BOF)	16	25-30
Steel (EAF)	67	100
Aluminum	20-95	20-95
Fiber (felt) or Fiber Composite	50-100	50-100
Rubber	12-100	100
Plastic or Plastic/Rubber Composite	100	100

Wood/Plastic Composite	No Range Recommended	100
Cement	No Range Recommended	No Range Recommended
Shower Dividers/Partitions, Steel		
Material	**Recovered Post-consumer Content (%)**	**Total Recovered Materials Content (%)**
Steel (from BOF)	16	25-30
Steel (from EAF)	67	100
Traffic Barricades		
Material	**Recovered Post-consumer Content (%)**	**Total Recovered Materials Content (%)**
Plastic (High Density Polyethylene [HDPE], Low-Density Polyethylene [LDPE], Polyethylene terephthalate [PET])	80-100	100
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 Size (HP)		**Open Drip-Proof (ODP)**		**Totally Enclosed Fan-Cooled (TEFC)**		
6-pole (1200 rpm)	**4-pole (1200 rpm)**	**2-pole (1200 rpm)**	**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

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 Size (HP)		**Open Drip-Proof (ODP)**		**Totally Enclosed Fan-Cooled (TEFC)**		
6-pole (1200 rpm)	**4-pole (1200 rpm)**	**2-pole (1200 rpm)**	**6-pole (1200 rpm)**	**4-pole (1200 rpm)**	**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 Commercial	< 2.2 gallons per minute
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				Quantity and Cost Information				
	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	

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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 requests authorization to work in other then regular working hours and such authorization is granted by the Commissioner. (Regular work hours are those hours during which any given facility, in which work is to be done, is customarily open and functioning, normally between the hours of 8:00 A.M. and 4:00 P.M. Monday - Friday.) If such work schedule is authorized by the Commissioner, the work shall be done at no additional cost to the City.

J. The Commissioner may order that work be done in other than regular working hours as herein by defined and this order may require the asbestos abatement

contractor to pay premium or overtime wages to complete the work. If the Commissioner orders work in other than regular working hours, the asbestos abatement contractor shall multiply the unit price for that portion of the work requiring premium wages by 1.50 when computing payment in accordance with Paragraph 1.09. All requests for premium payment must be supported by certified payroll sheets and field sheets approved by the Construction Project Manager.

1.02 QUALIFICATIONS OF ASBESTOS ABATEMENT CONTRACTOR

A. Requirements: The asbestos abatement contractor must 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 sub-asbestos abatement contractor; amount of contract or subcontract and the date of completion.

5. The asbestos abatement contractor must demonstrate that it has the financial resources, 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 AIR MONITORING – ASBESTOS ABATEMENT CONTRACTOR

A. "Air Sampling" shall mean the process of measuring the fiber content of a known volume of air collected during a specific period of time. The procedure utilized for asbestos follows the N1OSH Standard Analytical Method 7400 or the provisional transmission electron microscopy methods developed by the USEPA and/or National Institute of Standard and Technology which are utilized for lower detectability and specific fiber identification.

B. Air monitoring of asbestos abatement contractor's personnel will be performed in conformance with OSHA requirements, (All costs associated with this work are deemed included in the unit price.).

C. Qualifications of Testing Laboratory:

The industrial hygiene laboratory shall be a current proficient participant in the American Industrial Hygiene Association (AIHA) PAT Program. The laboratory identification number shall be submitted and approved by the City. The laboratory shall be accredited by the AIHA and New York State Department of Health Environmental Laboratory Approval Program (ELAP).

Note: Work area air testing and analysis before, during and upon completion of work (clearance testing) will be performed by a Third Party Air Monitor under separate Contract with the City.

1.06 THIRD PARTY MONITORING AND LABORATORY

A. The NYCDDC, at its own expense, will employ the services of an independent Third Party Air Monitoring Firm and Laboratory. The Third Party Air Monitor will perform air sampling activities and project monitoring at the Work Site.

B. The Laboratory will perform analysis of air samples utilizing Phase Contrast Microscopy (PCM) and/or Transmission Electron Microscopy (TEM).

C. The Third Party Air Monitoring Firm and the designated Project Monitor shall have access to all areas of the asbestos removal project at all times and shall continuously inspect and monitor the performance of the asbestos abatement contractor to verify that said performance complies with this Specification. The Third-Party Air Monitor shall be on site throughout the entire abatement operation.

D. The NYCDDC will be responsible for costs incurred with the Third Party Air Monitoring Firm and laboratory work. Any subsequent additional testing required due to limits exceeded during initial testing shall be paid for by the asbestos abatement contractor.

1.07 PAYMENT REQUEST DOCUMENTATION

A. The following information shall be included for each payment request:

1. Description of work performed.

2. Linear footage and pipe sizes involved.

3. Square footage for boiler & breaching insulation removed.

4. Square footage of non pipe and boiler areas removed, patched, enclosed, sealed, or painted.

5. Square footage of encapsulation, sealing, patching, and painting involved.

6. Total cost associated with compliance with the assigned task.

7. Architectural, Electrical, HVAC, Plumbing, etc. work incidental to the Asbestos Abatement Work.

8. A certified copy (in form 4312-39) to the Comptroller or Financial Officer of the New York City to the effect that the financial statement is true.

9. A signed copy (in form 6506q-6) of certificate of compliance with non-discriminatory provisions of the Contract.

10. Attach a copy of valid workmen compensation insurance.

11. Valid asbestos insurance per occurrence.

12. General liability insurance when required.

B. 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.

C. EXPOSURE LOG: With this final payment, the asbestos abatement contractor shall submit a listing of the names and social security numbers of all employees actively engaged in the abatement work of this Contract. This list shall include a summary showing each part of the abatement work in which the employee was engaged and the dates thereof.

1.08 QUANTITY CALCULATIONS

In order to determine the square footage involved for the various pipe sizes of pipe insulation that might be encountered, the following table is to be used.

PIPE INSULATION SIZE O.D.	PIPE SIZE O.D.	SQUARE FOOTAGE PER LINEAR FOOT
2-1/2"	1/2"	0.65
2-3/4"	3/4"	0.72
3"	1"	0.79
3-1/4"	1-1/4"	0.85
3-1/2"	1-1/2"	0.92
4"	2"	1.05
4-1/2"	2-1/2"	1.18
5”	3”	1.31
6"	3-1/4"	1.57
7"	3-1/2"	1.83
8"	4"	2.09
9”	5"	2.36
10"	6"	2.62
12"	8"	3.14
14"	10"	3.67
16"	12"	4.19
18"	l4”	4.71

1.09 METHOD OF PAYMENT

Payment shall be made in accordance with Items A through R below. Payment shall be calculated based on the actual quantity of the item performed by the asbestos abatement contractor, times the unit price specified below. Credits may apply to certain times, as specified below.

A. **REMOVAL, DISPOSAL AND REPLACEMENT OF ASBESTOS CONTAINING PIPE INSULATION:** Actual linear footage, multiplied by the square footage factor listed for the respective pipe size in Section 1.08, multiplied by the unit price in Section 1.04.

1. EXAMPLE: 100 lin.ft. of 1/2" pipe and 100 lin.ft. of 6" pipe, including elbows, tees. Flanges, etc.
2. 100 X 0.65 = 65 sq.ft. 65 x unit price = Payment
3. 100 X 2.62 = 262 sq.ft. 262 x unit price = Payment

B. **REMOVAL, DISPOSAL AND REPLACEMENT OF BOILER INSULATION:** (all types including Silicate Block and including the removal/replacement of metal jacketing) Payment shall be made at 1.5 times the unit price per square foot.

1. EXAMPLE: Item B. removal and replacement of 1000 S.F. of boiler insulation (incl. Silicate block)
2. 1000 S.F. X (1.5) X the Unit Price = Payment

C. **REMOVAL, DISPOSAL AND REPLACEMENT OF TANK INSULATION:** (all types including removal/replacement of metal jacketing) Payment shall be made at 1.5 times the unit price per square foot.

D. **REMOVAL, DISPOSAL AND REPLACEMENT OF BOILER UPTAKE, & BREACHING INSULATION:** (all types including stiffening angles and wire lath) Payment shall be made at 2.0 times the unit price per square foot.

E. **REMOVAL, DISPOSAL AND REPLACEMENT OF DUCT INSULATION:** Payment shall be made at 1.0 times the unit price per square foot.

F. **REMOVAL, DISPOSAL AND REPLACEMENT OF SOFT ASBESTOS CONTAINING MATERIAL:** (Including sprayed-on fire proofing and sound proofing) Payment shall be made at 1.0 times the unit price per square foot of surface area. Area of irregular surfaces must be calculated and confirmed with DDC representative.

G. **ACOUSTIC PLASTER REPAIR AND/OR ENCAPSULATION:** Payment shall be made at 0.5 times the unit price per square foot.

H. **PATCHING OR REPAIR** of items listed in A through F will be paid at 0.33 times the unit price per square foot.

I. **REMOVAL, DISPOSAL AND REPLACEMENT OF WATERPROOFING ASBESTOS CONTAINING MATERIAL: (**including friable and non-friable waterproofing material from interior and exterior walls, floors, foundations, penetrations, louvers, vents and openings other than windows, doors and skylights) Payment shall be made at 0.5 times the unit price per square foot.

J. **REMOVAL, DISPOSAL AND REPLACEMENT OF ASBESTOS CONTAINING ELECTRICAL WIRING INSULATION:** (including friable and non-friable wiring insulation) Payment shall be made at 0.33 times the unit price per square foot.

K. **PAINTING:** Payment shall be made at 0.05 times the unit price per square foot.

L. **REMOVAL AND DISPOSAL OF ASBESTOS-CONTAINING PLASTER:** from ceilings and walls, including any wire lath and disposal as asbestos containing waste. Payment shall be made at 0.80 times the unit price per square foot.

M. **REMOVAL AND DISPOSAL OF ASBESTOS-CONTAINING FLOOR TILES, CEILING TILES, TRANSITE PANELS:** (including any adhesive, glue, mastic and/or underlayment) and disposal as asbestos containing waste. Payment shall be made at 0.40 times the unit price per square foot. If multiple layers are discovered, each additional layer shall be paid at 0.20 times the unit price per square foot.

N. **ADDITIONAL CLEAN UP/HOUSEKEEPING OF WORK AREA:** (excluding pre-cleaning of work area required by regulations) HEPA vacuuming and wet cleaning of asbestos contaminated surface. Payment shall be made at 0.20 times the unit price per square foot. When GLOVE BAG is employed to remove ACM, cost of HEPA vacuuming and wet cleaning of floor area up to 3 feet on each side of glove-bag shall be included in unit price and no extra payment will be made.

O. **REMOVAL, DISPOSAL OF ASBESTOS-CONTAINING ROOFING MATERIAL:** including mastic, flashing and sealant compound and provide temporary asbestos-free roof covering consisting of one layer of rolled roofing paper sealed with asphaltic roofing compound. Payment shall be made at 0.8 times the unit price per square foot. Credit at a rate of 0.33 times the unit price will be taken for each square foot of temporary roof covering which the asbestos abatement contractor is directed not to install.

P. **PICK-UP AND DISPOSAL OF GROSS DEBRIS:** (excluding any waste generated from abatement under Item A-R) at a rate of $150 per cubic yard for asbestos contaminated waste and $75 per cubic yard for non-asbestos contaminated waste. This cost includes all labor and material cost associated with work.

Q. **REMOVAL OF ASBESTOS-CONTAINING BRICK, BLOCK, MORTAR, CEMENT OR CONCRETE:** along with all surfacing materials including wire lath and/or other supporting structures and disposal as ACM waste. Payment shall be made at a rate of $25.00 per cubic foot of material removed.

R. **REMOVAL AND DISPOSAL OF ASBESTOS CONTAINING WINDOW/DOOR CAULKING:** including friable and non-friable caulking, weather-stripping, glazing, sealants or other waterproofing materials applied to windows, doors, skylights, etc. Payment shall be made at the rate of $400.00 per opening regardless of size or configuration. This cost includes labor, consumable materials, set-up/breakdown, removal and disposal, as required.

Note 1: CREDIT: For items listed in A through F, a credit at a rate of 0.33 times the unit price, times the respective multiplier (for each item) will be taken for each square foot of insulation which the asbestos abatement contractor is not directed to reapply.

Note 2: MINIMUM PAYMENT: The minimum payment per call at any individual job sites or various job sites during the same day will be eight hundred dollars ($800.00).

Note 3: All payments shall be made as described in paragraph 1.09 herein**.**

Note 4: WORKING HIGHER THAN 12 FEET ABOVE FLOOR LEVEL OR WORK REQUIRING COMPLEX SCAFFOLDING OR CONSTRUCTION WORK PLATFORMS: Provisions are made in this Contract to compensate the asbestos abatement contractor for work performed in locations that are difficult to access due to work at elevations that are significantly higher than the normal work level. The unit price for these items will be paid at 1.20 times the unit price described in Paragraphs 1.09, A through R

for those portions of the work that are more than twelve (12) feet above the grade for that would be judged as the normal working level.

1.10 GUARANTEE

A. Work performed in compliance with each task shall be guaranteed for a period of one year from the date the completed work is accepted by the Department of Design and Construction.

B. The Commissioner of The Department of Design and Construction will notify the asbestos abatement contractor in writing regarding defects in work under the guarantee.

1.11 OCCUPANCY OF SITE NOT EXCLUSIVE

Attention is specifically drawn to the fact that contractors, performing the work of other Contracts, may be brought upon any of the work sites of this Contract. Therefore, the asbestos abatement contractor shall not have exclusive rights to any site of his work and shall fully cooperate and coordinate his work with the work of other contractors who may be brought upon any site of the work of this Contract. This paragraph applies to those areas outside the regulated Work Area as defined by Title 15, Chapter I of RCNY.

1.12 SUBMITTALS

A. Pre-Construction Submittals:

1. Attend a pre-construction meeting scheduled by the City of New York Department of Design and Construction. This meeting shall also be attended by a designated representative of the City of New York third party air monitoring firm, facility manager and the Construction Project Manager. At this meeting, the asbestos abatement contractor shall present three copies of the following items:

   a. asbestos abatement contractor’s scope of work, work plan and schedule.

   b. Asbestos project notifications, approved variances and plans to Government Agencies.

   c. Copies of Permits, clearance and licenses if required.

   d. Schedules: the asbestos abatement contractor shall provide to the Construction Project Manager a copy of the following schedules for approval. Once approved, schedules shall be maintained and updated as received. asbestos abatement contractor shall post a copy of all schedules at the site:

(1) A construction schedule stating critical dates of the project including, but not limited to, mobilization, Work Area preparation, demolition, gross removal, fine cleaning, encapsulation, inspections, clearance monitoring, and phase of refinishing and final inspections. The schedule shall be updated biweekly, at a minimum.

(2) A schedule of staffing stating number of workers per shift per activity, name and number of supervisor(s) per shift, shifts per day, and total days to be worked.

(3) Submit all changes in schedule or staffing to the Construction Project Manager prior to implementation.

e. Written description of emergency procedures to be followed in case of injury or fire. This section must include evacuation procedures, source of medical assistance (name and telephone number to nearest hospital) and procedures to be used for access by medical personnel (examples: first aid squad and physician). NOTE: Necessary Emergency Procedures Shall Take Priority Over All Other Requirements of These Specifications.

f. 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:

1. Lien Waivers from asbestos abatement contractor, sub-asbestos abatement contractors and Suppliers,

2. Daily OSHA air monitoring results,

3. All Waste Manifests (Asbestos and Construction Debris), seals and disposal logs,

4. Field Sign-In/Sign-Out Logs for every shift,

5. Copies of all Building Department Forms and Permits,

6. A Letter of Compliance stating that all the work on this project was performed in accordance with the Specifications and all applicable Federal, State and Local regulations,

7. All Warranties as stated in the Specifications,

    a. Fully executed disposal certificates and transportation manifest.

8. Project Record: The asbestos abatement contractor shall maintain a project record for all small and large asbestos projects. During the project, the project record shall be kept on site at all times. Upon completion of the project, the project record shall be maintained by the building owner. The project record shall be submitted to DDC as part of the close out documents. The project record shall consist of:

    a. Copies of licenses of all asbestos abatement contractors involved in the project;

    b. Copies of NYCDEP and NYSDOL supervisor and handler certificates for all workers engaged in the project;

    c. Copies of all project notifications and reports filed with NYCDEP, NYSDOL and USEPA for the project, with any amendments or variances;

    d. Copies of all asbestos abatement permits, including associated approved plans and work place safety plan;

    e. A copy of the air sampling log and all air sampling results;

    f. A copy of the abatement asbestos abatement contractor’s daily log book;

    g. Copies of all asbestos waste manifests;

    h. A copy of all Project Monitor’s Reports (ACP-15).

i. A copy of each ATR-1 Form completed for the asbestos project (if required).

j. A copy of each Asbestos Project Conditional Closeout Report (ACP-20) if required.

k. A copy of the Asbestos Project Completion Form (ACP-21).

1.13 PROTECTION OF FURNITURE AND EQUIPMENT

Cover all furniture and equipment that cannot be removed from Work Areas. Movable furniture and equipment will be removed from Work Areas by the asbestos abatement contractor prior to start of work. At the conclusion of the work (after final air testing), the asbestos abatement contractor will remove all plastic covering on walls, floors, furniture, equipment and reinstall furniture and equipment. He shall remove and store all sheaths, curtains and drapes, and reinstall same following final clean up.

1.14 UTILITIES

A. General:

All temporary facilities shall be subject to the approval of the Commissioner. Prior to starting work at any site, locations and/or sketches (if required) of temporary facilities must be submitted to the Construction Project Manager for the required approval.

B. Water:

The Department of Design and Construction will furnish all water needed for construction, at no cost to the asbestos abatement contractor in buildings under their jurisdiction. However, it is the responsibility of the asbestos abatement contractor to ensure that hot water is provided for showering in the decontamination unit. The asbestos abatement contractor shall furnish, install and maintain any needed equipment to meet these requirements at his own expense.

C. Electricity:

The Department of Design and Construction will furnish all electricity needed for construction, at no cost to the asbestos abatement contractor in a building, under their jurisdiction. The asbestos abatement contractor is responsible for routing the electric power to the abatement Work Area.

All temporary lighting and temporary electrical service for Work Area shall be in weatherproof enclosures and be ground fault protected.

D. In leased spaces, arrangements for water supplies and electricity must be made with the landlord. However, all such arrangements must be made through and are subject to approval of the Department of Design and Construction. Utilities will be provided at no cost to the asbestos abatement contractor. However, it is the asbestos abatement contractor's (or the general contractor's) responsibility to furnish and install a suitable distribution system to the Work Area. This system will be provided at no cost to the City.

1.15 FEES

The asbestos abatement contractor shall be responsible for any and all fees or charges imposed by Local, State or Federal Law, Rule and Regulation applicable to the work specified herein, including fees or charges which may be imposed subsequent to the date of the Bid opening.

END OF SECTION

SECTION 03 30 00 - CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum and (5) the Contract (City of New York Standard Construction Contract).

1.2 SUMMARY

A. This Section includes cast-in-place concrete, and related formwork, reinforcement, concrete materials, mixture design, placement procedures, and finishing.

1.3 SUBMITTAL PROCEDURES

A. Refer to DDC General Conditions Section 01 33 00 “Submittal Procedures”.

B. Product Data: For each product specified in Part 2 - Products.

C. Submit Textured Forms or Form Liners: For each texture proposed for use in imparting texture to form-facing cast-in-place concrete.

D. Submit Concrete Design Mixtures: Written report in compliance with Special Inspection requirements for each type and strength of concrete mixture. Submit in time as indicated, or no later than fifteen (15) business days prior to start of Work, whichever is sooner.

E. Submit Special Inspection Reports.

F. Submit Field Quality Control Test Reports: If not in conflict with special inspections, submit for each test indicated within 24 hours after test is conducted.
   1. Sampling Reports.
   2. Slump Test Reports.
   3. Compressive Strength Test Reports.
   4. Air Content Test Reports.

1.4 Quality Assurance

A. Refer to DDC General Conditions Section 01 40 00 “Quality Requirements”.

B. Section 01 81 13 - Sustainable Design Requirements - New York City Environmentally Preferable Purchasing Compliance.

1.5 Tests and Inspections

A. Field Quality Control Testing: If not in conflict with, or covered by special inspections, comply with the following:
   1. Sampling: ASTM C 172.
   2. Slump Testing: ASTM C 143.
      a. Test Specimen: One test specimen for each load at point of discharge.
   3. Compressive Strength Testing: ASTM C 39.
      a. Test Specimen: One set of three (3) test specimens for each 50 cubic yards or fraction thereof of each class of concrete:
         1) one (1) specimen tested at 7 days
         2) one (1) specimen tested at 28 days
         3) one (1) specimen retained for later testing if required.
   4. Air Content Testing: ASTM C 173.
      a. Test Specimen: One test specimen for each set of compressive strength specimens.

1.6 Project Conditions

A. Comply with ACI 306 "Cold Weather Concreting" for cold weather protection.

B. Comply with ACI 305 "Hot Weather Concreting" for hot weather protection.

PART 2 - PRODUCTS

2.1 Concrete Materials

A. Concrete
   1. Comply with the following:
      a. Portland Cement: ASTM C 150, Type as required.
      b. Fly Ash: ASTM C 618, Type C or F. Limit use of fly ash in concrete mix design to not exceed 25% of cement content by weight.
      c. Aggregates:
         1) For normal weight concrete: ASTM C 33, except local aggregates of proven durability may be used when accepted in advance in writing by Commissioner.
      d. Water: ASTM C 94, potable.
      e. Air Entraining Admixture: ASTM C 260. Use air entraining admixture in all concrete, providing not less than 4% or more than 8% entrained air for concrete exposed to freezing and thawing, and from 2% to 4% for other concrete. No more than 4% to 7% for lightweight fire-rated interior slabs.
      f. Water Reducing Admixture: ASTM C 494, type as required to suit project conditions.
      g. Only use admixtures which have been tested and accepted in mix designs, unless otherwise approved in advance in writing by Commissioner.

2.2 Reinforcing Materials

A. Deformed Reinforcing Bar (Epoxy Coated)
1. Comply with ASTM A 775, Grade 60, unless otherwise indicated.

B. Welded Wire Fabric (Epoxy Coated)
1. Comply with ASTM A 884

2.3 Related Materials

A. Waterstops
1. Flat dumbbell or center bulb type, size to suit joints, of either rubber in accordance with CRD C 513, or PVC in accordance with CRD C 572.

B. Moisture Barrier
1. Comply with ASTM D 4397. Clear 10 mil thick polyethylene.

C. Membrane Curing Compound
1. Comply with ASTM C 309, Type I.

2.4 Concrete Design Mixtures

A. Required concrete strengths are indicated on the Drawings.

B. Design mixtures in compliance with Special Inspection requirements including, those indicated on Drawings.

C. If not in conflict with, or covered by the requirements, prepare design mixtures for each type and strength of concrete, proportioned on the basis of laboratory trial mixture or field test data, or both.

2.5 Concrete Mixing

A. Job Site Mixing: Use drum type batch machine mixer, mixing not less than 1 1/2 minutes for one cubic yard or smaller capacity. Increase mixing time at least 15 seconds for each additional cubic yard or fraction thereof.

B. Ready Mix Concrete: ASTM C 94.

PART 3 - EXECUTION

3.1 Refer to DDC General Conditions.

3.2 Formwork

A. Erect, shore, brace and maintain formwork to support vertical, lateral, static and dynamic loads, and construction loads that might be applied, until structure can support such loads.

B. Construct so that concrete members and structures are of correct size, shape, alignment, elevation and position.

C. Provide openings in formwork to accommodate Work of other trades.

D. Clean and adjust forms prior to concrete placement. Apply form release agents or wet forms, as required. Retighten forms during concrete placement if required to eliminate leaks.

3.3 Embedded Items

A. Place and secure anchorage devices and other embedded items required or adjoining Work that is attached to or supported by cast-in-place concrete. Use setting diagrams, templates and instructions provided by others for locating and setting.

3.4 Reinforcement

A. Comply with CRSI's "Manual of Standard Practice" for placing reinforcement.

B. Do not cut or puncture moisture barrier. Repair damage and reseal moisture barrier before placing concrete.

3.5 Joints

A. Provide construction, isolation, and control joints as indicated, and as required to stabilize differential settlement and random cracking.
   1. Locate construction joints so as not to impair strength and appearance of structure.
   2. Construct joints true to line with faces perpendicular to surface plane of concrete.

3.6 Concrete Placement

A. Deposit concrete continuously in one layer or in horizontal layers of such thickness that no new concrete will be placed on concrete that has hardened enough to cause seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as indicated. Deposit concrete to avoid segregation.

B. Consolidate placed concrete using mechanical vibrating equipment with hand rodding and tamping, so that concrete is worked around reinforcement and other embedded items and into forms.

3.7 Concrete Finishing

A. Unless otherwise noted on Drawings, finish concrete as follows:
   1. Vertical Surfaces: Provide a smooth finish for exposed concrete surfaces and surfaces that are to be covered with a coating or covering material applied directly to concrete. Remove fins and projections, patch defective areas with cement grout, and rub smooth.
   2. Horizontal Surfaces:
      a. General:
         1) Comply with ACI 302 "Guide for Concrete Floor and Slab Construction" recommendations for screeding, re-straightening, and finishing operations for concrete surfaces. Do not wet concrete surfaces.
         2) Comply with ASTM E 1155 to establish flatness and levelness as indicated below.
      b. Scratch Finish: Apply scratch finish to monolithic slab surfaces to receive concrete floor topping or mortar setting beds for tile, and other bonded applied cementitious finish flooring material.
         1) After leveling, while still plastic, roughen surface before final set to produce a profile amplitude of 1/4" in one direction.
         2) Plane surface to tolerance for floor flatness (Ff) of 15 and floor levelness (Fl) of 13.
         3) Slope surfaces uniformly to drain where required.
      c. Float Finish: Apply float finish to monolithic slab surfaces to receive trowel finish; or to slab surfaces to be covered with membrane waterproofing.
         1) Plane surface to tolerance for floor flatness (Ff) of 18 and floor levelness (Fl) of 15.
      d. Trowel Finish: After applying a float finish, apply trowel finish to monolithic slab surfaces that are exposed to view or are to be covered with resilient flooring, paint or other thin film coating.
         1) Consolidate concrete surfaces by finish troweling, free of trowel marks, uniform in texture and appearance.
         2) Grind smooth any surface defects that would telegraph through applied coatings or floor coverings.

3.8 Concrete Protection and Curing

A. Protection: Protect concrete from physical damage or reduced strength due to weather extremes during mixing, placement and curing.

B. Curing: Comply with ACI 308 "Standard Practice for Concrete Curing." Do not use membrane curing compound unless approved by Commissioner. Approval will only be considered in areas where concrete is not to receive applied coating or toppings.

END OF SECTION 03 30 00

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SECTION 22 05 00 – COMMON WORK RESULTS FOR PLUMBING

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. Piping materials and installation instructions common to most piping systems.
   2. Transition fittings.
   3. Mechanical sleeve seals.
   4. Sleeves.
   5. Escutcheons.
   6. Grout.
   7. Painting and finishing.
   8. Supports and anchorages

1.3 SUBMITTAL PROCEDURES

A. Refer to DDC General Conditions.

B. Product Data: For the following:
   1. Transition fittings.
   2. Mechanical sleeve seals.
   3. Escutcheons

PART 2 - PRODUCTS

2.1 PIPE, TUBE, AND FITTINGS

A. Refer to individual Division 22 piping Sections for pipe and fitting materials and joining methods.

2.2 JOINING MATERIALS

A. Refer to individual Division 22 piping Sections for special joining materials not listed below.

B. Pipe-Flange Gasket Materials: Suitable for chemical and thermal conditions of piping system contents.

1. ASME B16.21, nonmetallic, flat, asbestos-free, 1/8-inch maximum thickness unless thickness or specific material is indicated.
   a. Full-Face Type: For flat-face, Class 125, cast-iron and cast-bronze flanges.
   b. Narrow-Face Type: For raised-face, Class 250, cast-iron.AWWA C110, rubber, flat face, 1/8 inch thick, unless otherwise indicated; and full-face or ring type, unless otherwise indicated.

C. Flange Bolts and Nuts: ASME B18.2.1, carbon steel, unless otherwise indicated.

2.3 TRANSITION FITTINGS

A. AWWA Transition Couplings: Same size as, and with pressure rating at least equal to and with ends compatible with, piping to be joined.
   1. Cascade Waterworks Mfg. Co.
   2. Dresser Industries, Inc.; DMD Div.
   3. Ford Meter Box Company, Incorporated (The); Pipe Products Div.
   4. JCM Industries.
   5. Smith-Blair, Inc.
   6. Viking Johnson
   7. Or approved equal.

2.4 SLEEVES

A. Galvanized-Steel Sheet: 0.0239-inch minimum thickness; round tube closed with welded longitudinal joint.

2.5 ESCUTCHEONS

A. Description: Manufactured wall and ceiling escutcheons and floor plates, with an ID to closely fit around pipe.

2.6 GROUT

A. Description: ASTM C 1107, Grade B, nonshrink and nonmetallic, dry hydraulic-cement grout.

B. Characteristics: Post-hardening, volume-adjusting, nonstaining, noncorrosive, nongaseous, and recommended for interior and exterior applications. Packaging: Premixed and factory packaged

PART 3 - EXECUTION

3.1 Refer to DDC General Conditions.

3.2 PIPING SYSTEMS - COMMON REQUIREMENTS

A. Install piping according to the following requirements and Division 22 Sections specifying piping systems.

B. Drawing plans, schematics, and diagrams indicate general location and arrangement of piping systems. Indicated locations and arrangements were used to size pipe and calculate friction loss, expansion, pump sizing, and other design considerations. Install piping as indicated unless deviations to layout are approved on Coordination Drawings.

C. Install piping in concealed locations, unless otherwise indicated and except in equipment rooms and service areas.

D. Install piping indicated to be exposed and piping in equipment rooms and service areas at right angles or parallel to building walls. Diagonal runs are prohibited unless specifically indicated otherwise.

E. Install piping above accessible ceilings to allow sufficient space for ceiling panel removal.

F. Install piping to permit valve servicing.

G. Install piping at indicated slopes.

H. Install piping free of sags and bends.

I. Install fittings for changes in direction and branch connections.

J. Install piping to allow application of insulation.

K. Select system components with pressure rating equal to or greater than system operating pressure.

L. Install escutcheons for penetrations of walls, ceilings, and floors according to the following:

1. New Piping:
    a. Piping with Fitting or Sleeve Protruding from Wall: One-piece, deep-pattern type.
    b. Bare Piping at Wall and Floor Penetrations in Finished Spaces: One-piece, stamped-steel type.
    c. Bare Piping at Ceiling Penetrations in Finished Spaces: One-piece, stamped-steel type or split-plate, stamped-steel type with concealed hinge and set screw.
    d. Bare Piping in Equipment Rooms: One-piece, cast-brass type.
    e. Bare Piping at Floor Penetrations in Equipment Rooms: One-piece, floor-plate type.
2. Existing Piping:

M. Sleeves are not required for core-drilled holes.

N. Install sleeves for pipes passing through concrete and masonry walls and concrete floor and roof slabs.

O. Install sleeves for pipes passing through concrete and masonry walls, gypsum-board partitions, and concrete floor and roof slabs.

1. Cut sleeves to length for mounting flush with both surfaces.
   a. Exception: Extend sleeves installed in floors of mechanical equipment areas or other wet areas 2 inches above finished floor level. Extend cast-iron sleeve fittings below floor slab as required to secure clamping ring if ring is specified.

2. Install sleeves that are large enough to provide 1/4-inch annular clear space between sleeve and pipe or pipe insulation. Use the following sleeve materials:
   a. Steel Pipe Sleeves: For pipes smaller than NPS 6.
      1) Seal space outside of sleeve fittings with grout.

P. Fire-Barrier Penetrations: Maintain indicated fire rating of walls, partitions, ceilings, and floors at pipe penetrations. Seal pipe penetrations with firestop materials.

3.3 PIPING JOINT CONSTRUCTION

A. Join pipe and fittings according to the following requirements and Division 22 Sections specifying piping systems.

B. Remove scale, slag, dirt, and debris from inside and outside of pipe and fittings before assembly.

3.4 EQUIPMENT INSTALLATION - COMMON REQUIREMENTS

A. Install equipment to allow maximum possible headroom unless specific mounting heights are not indicated.

B. Install equipment level and plumb, parallel and perpendicular to other building systems and components in exposed interior spaces, unless otherwise indicated.

C. Install plumbing equipment to facilitate service, maintenance, and repair or replacement of components. Connect equipment for ease of disconnecting, with minimum interference to other installations. Extend grease fittings to accessible locations.

D. Install equipment to allow right of way for piping installed at required slope.

3.5 PAINTING

A. Damage and Touchup: Repair marred and damaged factory-painted finishes with materials and procedures to match original factory finish.

3.6 ERECTION OF METAL SUPPORTS AND ANCHORAGES

A. Cut, fit, and place miscellaneous metal supports accurately in location, alignment, and elevation to support and anchor plumbing materials and equipment.

B. Field Welding: Comply with AWS D1.1.

END OF SECTION 22 05 00

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SECTION 22 05 23– GENERAL DUTY VALVES FOR PLUMBING PIPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum and (5) the Contract [City of New York Standard Construction Contract].

1.2 SUMMARY

A. Section includes: Valves, specialties and installation requirements.

B. Extent of Valve Work is indicated on the Drawings and by the Requirements of this Section.

C. All valves that convey drinking water for human consumption must be certified as "lead free" as defined in the Reduction of Lead in Drinking Water Act of 2011 (not more than a weighted average of .25% lead). Regardless of the valve manufacturer listed in these specifications, provide valves that meet the requirements of the act. All solder and flux used during installation of valves associated with the potable water system designed for human consumption must also meet the lead-free requirements of the act.

1.3 SUBMITTAL PROCEDURES

A. Refer to DDC General Conditions Section 01 33 00 "Submittal Procedures" for all submittals.

B. Product Data
   1. Manufacturer's product technical data for each valve.
   2. Installation Instructions
   3. Include list indicating valve and its application

C. Shop Drawings indicating methods of assembly of components.

D. Certifications
   1. Lead-free Certifications: Provide manufacturer's certifications that valve in contact with the potable water, except those that are exempted, meet the requirements of the Reduction of Lead in Drinking Water Act, effective Jan 4, 2014.

1.4 QUALITY ASSURANCE

A. Refer to DDC General Conditions Section 01 40 00 "Quality Requirements".

PART 2 - PRODUCTS

2.1 MATERIAL

A. Maximum content of lead permitted in materials used in the manufacture of valves shall be .25%.

B. All valves shall be designed for packing under pressure with valve open or closed.

C. Valves 2" and under shall be all bronze. Valves 2½" and over shall have iron bodies with bronze mountings (IBBM), and with outside screw and yoke (OS&Y), unless space conditions prevent the use of OS&Y. valves, in which case non-rising stem valves may be used.

D. All gate valves shall be of the solid wedge disk type.

E. All valves up to 2" in diameter shall have threaded or solder ends, 2½" in diameter and over shall have flanged ends.

F. Iron body flanged-valves, strainers and other items shall be provided with gaskets and sealing. All flanges shall be drilled for American Standard Association 125-pound standard.

G. All valves, except as otherwise specified, shall be type and number as specified below:
   1. Gate Valves:
      a. 200-300 CWP (Cold Working Pressure)/ or WOG (Water/Oil/Gas), threaded, bronze body, solid wedge, inside screw non-rising stem, screw-in bonnet: Milwaukee UP105, Hammond UP645, NIBCO T-113-LF, Apollo Valves 102T-LF, or approved equal.
      b. 200-300 CWP / or WOG, Solder end, bronze body, solid wedge, inside screw non-rising stem, screw-in bonnet: Milwaukee UP115, Hammond UP647, NIBCO S-113-LF, Apollo Valves 102S-LF, or approved equal.
      c. Class 125 & 150, flanged, iron body bronze mounted (IBBM), bolted bonnet, OS&Y., solid wedge: Stockham G-623, Milwaukee F-2885M, Hammond IR1140, NIBCO F-637-33, Crane 465-1/2, Apollo Valves 611F, or approved equal.
      d. Class 125, flanged, iron body bronze mounted (IBBM), non-rising stem, bolted bonnet, solid wedge: Stockham G-612, Milwaukee F-2882M, Hammond IR1138, NIBCO F-619-RWS, Crane 461, Apollo Valves 610F, or approved equal.
   2. Check Valves:
      a. 200-300 CWP/ or WOG, threaded ends, bronze body, horizontal swing, bronze disc: Milwaukee UP509, Hammond UP904, NIBCO T-413-Y-LF, Apollo Valves 161TF, or approved equal.
      b. 200-300 CWP /Or WOG, solder ends, bronze body, horizontal swing, bronze disc: Milwaukee UP1509, Hammond UP912, NIBCO S-413-Y-LF, Apollo Valves 161S-LF, or approved equal.
      c. Class 125, flanged ends, iron body bronze mounted (IBBM), bronze disc and seat ring, bolted cap, horizontal swing: Stockham G-931, Milwaukee F-2974M, Hammond IR1124, NIBCO F-918-B, Crane 373, Apollo Valves 910F, or approved equal.

H. Ball valves shall be two-piece, full port, 600 W.O.G., bronze body, chrome plated bronze or brass ball and Teflon seals, with thread or solder ends. Ball valves shall have a lever handle. Threaded ends ball valve shall be Conbraco Industries, Inc.; Apollo Valves 77CLF-100, Crane 9211, Milwaukee UPBA-400,

Hammond UP8301, NIBCO T-585-80-LF, or approved equal, and soldered ends ball valve shall be Conbraco Industries, Inc.; Apollo Valves 77CLF-200, Milwaukee UPBA-450, Hammond UP8311, NIBCO S-585-80-LF, or approved equal. Ball valves should be used for up to 2" sizes only.

1. Press-Fit Ball Valves: Valves shall be two-piece bronze body with full port, chrome or brass plated ball, blow-out proof stem and PTFE or RTFE seats, rated at 200 psi with press fitting ends. Ball Valves shall be Viega Model 2971.1ZL, NIBCO C585-80-LF, Conbraco Industries, Inc.; Apollo Valves 77WLF, Milwaukee UPBA400-P2, or approved equal. Ball valves shall have a metal lever handle.

I. Soldered end valves shall be joined using “soft” soldering.
   1. NOTE: All valves of one type, i.e., all gates, or all check valves shall be of one manufacturer.

PART 3 - EXECUTION

3.1 EXECUTION REQUIREMENTS

A. Refer to DDC General Conditions for the requirements governing execution.

B. Install valves in accordance with the manufacturer's instructions. Follow valve manufacturers recommendations when brazing solder end valves.

C. Valves shall be installed so that they shall be readily accessible. It is brought to the Contractor's attention that all valves shall be so located that they can be easily and safely operated. No valve shall be installed with the stem pointed downward. If, in the opinion of the Commissioner, valves are so installed as to create a hazardous and unsafe condition, this Contractor shall relocate these valves as directed without additional cost to the City of New York.
   1. Valve shall be full size of pipe. Iron body bronze mounted (IBBM), flanged, outside screw and yoke (OS&Y) valves shall be used on: water service and sprinkler service assemblies, suction and discharge piping for pumps and water distribution piping 2½" and larger. Valves on water distribution piping 2" and smaller shall be brass or bronze body.

D. Gate valves shall be provided at the base of all risers, on all mains, branch lines, take-offs, drains, etc., and at all pumps, equipment, and at all apparatus; so located and arranged as to give complete shut-off and regulating control of all systems piping and apparatus.
   1. Ball valves may be substituted for Gate Valves on water distribution pipes up to 2" in size for risers, branches and hot and cold headers in accessible toilet pipe spaces.

E. Swing check valves shall be installed in horizontal position with hinge pin horizontally perpendicular to centerline of pipe.

F. All valves shall have the name or trademark of the manufacturer and guaranteed working pressure cast or stamped on the body of the valve. All flanges shall be drilled for American Standards Association 125-pound Standard. Companion flanges for all iron body gate valves, check valves, strainers, etc., shall be iron.

3.2 VALVE APPLICATION SCHEDULE

A. Domestic Hot & Cold Water
   1. 2" and Less: Solder or threaded ends; Class 125, bronze body gates; bronze body swing checks.
   2. 2½" and up: Flanged ends; Class 125, OS&Y iron body gates; and iron body swing checks.

END OF SECTION 22 05 23

SECTION 22 05 29 – HANGERS AND SUPPORTS FOR PLUMBING PIPING AND EQUIPMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum and (5) the Contract [City of New York Standard Construction Contract].

1.2 SUBMITTAL PROCEDURES

A. Refer to DDC General Conditions Section 01 33 00 “Submittal Procedures” for all submittals.

B. Shop Drawings: Provide list of identification wording, symbols, letter size, and color-coding.

C. Schedules:
   1. Submit catalog cuts for each different type of hanger and rod, support and accessory.
   2. Submit method of support and hanging for Commissioner approval prior to installation.
   3. Submit manufacturer technical data of insert and rod for approval.

1.3 QUALITY ASSURANCE

A. Refer to DDC General Conditions Section 01 40 00 “Quality Requirements”.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Pipe Hangers and Supports
   1. Hangers for horizontal piping (insulated and uninsulated) one inch and smaller, supported from above shall be of malleable iron, adjustable swivel ring type and shall comply with MSS SP-69 Type 6.
   2. Hangers for horizontal piping (insulated and uninsulated) and insulated copper tubing larger than one inch, shall be of carbon steel, adjustable clevis type and shall conform to MSS SP-69 Type 1.
   3. Hangers for uninsulated horizontal copper tubing one inch and smaller, supported from above shall be of malleable iron with copper finish, adjustable ring type, complying with MSS SP-69 Type 6, or with MSS SP 69 Type 15 if with Turnbuckle Adjuster.
   4. Hangers for uninsulated horizontal copper tubing larger than one inch shall be of carbon steel with copper finish adjustable clevis type, complying with MSS SP 69 Type 1.
   5. Support for horizontal pipe runs on roof shall be heavy-duty pipe rollers. Rollers assembly shall consist of galvanized steel channel track, galvanized steel fittings, washers and nuts, painted cast iron roller and locking devices to maintain pipe location. Assembly shall allow both vertical and horizontal adjustment. Heavy-duty pipe roller support shall be with integral base plate. The support

for the gas piping installed horizontally on the roof shall be anchored or secured to the concrete deck. The base plate of the pipe roller support shall be secured to the concrete deck using stainless steel anchors. A 12" galvanized steel with integral base plate or a pipe support base made of polycarbonate plastic with bored holes for securing same to the concrete decking are acceptable.

6. Supports for vertical piping and copper tubing shall be double bolt riser clamps, complying with MSS SP 69 Type 8 with each end having equal bearing on the building structure located as hereinafter specified. If piping is insulated, riser clamp shall be placed under insulation.
7. Where piping is run near the floor and is supported from the floor, such supports except as otherwise noted shall be of pipe standards with base flange and adjustable top yoke complying with MSS-SP-69 Type 38.
8. Storm drainage leader piping running exposed along the outside face of building wall shall be supported by offset pipe clamp of carbon steel.
9. Trapeze type hangers shall be made of 2"x2"x1/4" carbon steel angle iron with drilled holes and 1/2" hangers rods. In lieu of an angle iron, a strut assembly may also be used for the trapeze kind of hanger support.
10. Bracing for cast iron No-Hub vertical piping (all sizes) and horizontal piping 6" and larger shall be made up of riser clamps, clevis hangers or two four bolt cast iron socket clamps.
11. Sway bracing for horizontal No-Hub cast iron piping shall be made up of double bolt riser clamp, complying with MSS SP 69 Type 8, galvanized steel 12" long shields, conforming to MSS SP 69 Type 40, and 1" x 1/8" steel plate.
12. At all points of support, a galvanized steel shield shall be provided between the hanger and pipe insulation complying with MSS SP 69 Type 40.
13. Hangers and Supports shall be by following manufacturers:
    a. Anvil International
    b. Carpenter & Paterson, Inc,
    c. Hilti, Inc,
    d. Cooper B-Line, Inc.,
    e. Or approved equal.

B. Expansion bolts for use in existing and new reinforced concrete slabs shall be as follows:
1. Trubolt as manufactured by ITW Ramset/Red Head
2. Kwik Bolts as manufactured by Hilti, Inc.
3. Power Stud as manufactured by Powers Fasteners, Inc.
4. Or approved equal

C. Inserts for use in new conventional reinforced poured concrete slabs shall be as follows:
1. Insert No. 650 made by Carpenter & Paterson Inc.
2. Insert Fig. 281 made by ITT Anvil International.
3. Insert No. 100 made by C. H. Leibfried Mfg. Corp.
4. Insert No. 96900 Series made by Hilti, Inc.
5. Insert No. B2500 and N2500 Series made by Cooper B-Line, Inc.
6. Or approved equal

D. Inserts for use in new composite metal decks shall be as follows:
1. Inserts shall be “Bang-It” steel deck insert as manufactured by Powers Fasteners or HCI-MD Cast-In Anchor for Metal Deck as manufactured by
    a. Hilti, Inc., Carpenter & Paterson, Inc,
    b. Hilti, Inc,

c. Cooper B-Line, Inc.,
d. Or approved equal.

E. Fasteners, as required, shall be as follows:
1. Lag screws or Long screws.
2. Long Expansion bolts
3. Bolts and nuts

PART 3 - EXECUTION

3.1 EXECUTION REQUIREMENTS

A. Refer to DDC General Conditions for the requirements governing execution.

3.2 INSTALLATION

A. Supports shall be adequate to securely support the piping and its contents, to prevent vibration and to provide proper allowance for expansion and contraction of the piping.

B. All piping running close to or on walls shall be supported by means of hanger suspended from heavy angle iron wall brackets. No wall hooks will be permitted.

C. Hanger rods shall be of ample size to support the pipe and its contents and shall have machine cut American Standard V-threads. At a minimum hanger rod size shall be the same as that recommended by the hanger manufacturer for each sized hanger. Hangers shall be recessed to approved beam clamps, concrete inserts, steel plates or other approved devices. Expansion shields and bolts shall not be used in the ceilings of cinder concrete, but may be used where the shields and bolts are horizontal.

D. Where more than two pipes run parallel, the Contractor may install trapeze type hangers, constructed of 2" x 2" x 1/4" angle iron or channel strut “kindorph” and 1/2" hanger rods. Provide holes in the trapeze angle iron as required to accommodate rods for the individual supports. Burning of holes in angle supports is not acceptable. Provide individual supports for piping, where necessary to provide proper pitch. Trapeze type hanger when used with uninsulated copper tubing shall have copper finish. Spacing of trapeze type hangers shall be as required by the smallest size pipe/tube supported by trapeze hanger.

E. At all points of support of insulated piping and tubing a galvanized metal shield shall be installed between the hanger and pipe insulation. The use of the galvanized metal shield shall be eliminated. Position the pipe on the saddle, notch section of the insulation to fit around the saddle, square cut the adjoining insulation section and butt the mating end to the notched section, finish taping according to standard methods, No galvanized metal shield is required.

F. No piping shall be supported from other pipes, ductwork, electric conduit, hung ceiling, cinder concrete or work of other trades.

G. When support method is not shown on Drawings, pipes laid underground shall be firmly bedded on solid ground under the body of the pipe. Where suitable bearing cannot be obtained because the ground has been

disturbed by excavating, or for any other reason, the pipe shall be supported by concrete piers or by approved brackets secured to the walls. Piers and/or steel brackets shall be installed at not more that 5'-0" intervals. New piping passing under cinder concrete areas shall be supported by hangers secured by means of beam clamps fastened to existing floor beams. Where pipe support spacing is excessive between existing steel, beam clamps shall be fastened to structural members that are installed by this Contractor and approved by the Commissioner. Removed fireproofing around beams shall be replaced to original condition.

H. Overhead horizontal drains, vents, supply or other piping shall be supported by adjustable wrought iron, steel or malleable iron hangers. Double locknuts shall be installed all hangers. The metal decks shall not be used for support of piping or equipment.

I. Intervals of supports for horizontal piping shall be as follows:
1. Hub and Spigot Cast iron soil and vent pipe - At 5' intervals and 18" behind each hub or joint.
2. No-Hub Cast iron soil and vent pipe: - At 5' intervals and within 12" of each joint.
3. Threaded pipe (1¼" or less) - At 8' intervals
4. Threaded pipe (1½" or over) - At 12' intervals
5. Copper tubing (1¼" in. or less) - At 6' intervals
6. Copper tubing (1½" in. or over). At 10' intervals
7. Other Materials--As required for structural stability, service and as further stipulated in specifications and Drawings.

J. Intervals of supports for vertical piping shall be as follows:
1. All Cast iron soil and vent pipe: At base and at each story height, but in no case at intervals greater than 20'.
2. Threaded pipe: At every other story height, but in no case at intervals greater than 25'.
3. Copper tubing (Hard Temper): At each story height.
4. Other materials: As for structural stability and service.
5. Cast iron storm drainage leader piping exposed along outside face of building wall: At base and at 5' intervals and 18" behind each hub or joint.

K. Inserts and Expansion Bolt
1. Piping and equipment, hung from ceilings shall be properly supported from the ceiling slabs by means of required number of inserts. Provide inserts before the pouring of the slabs and expansion bolts after concrete is placed and completely cured.
2. Inserts for new conventional reinforced poured concrete slabs shall be designed for insertion of heavy nuts suitable for screwing up to and including 3/4" rods. Inserts shall not be primed. Install inserts so that hangers will appear true and uniform. Install inserts before the pouring of the concrete.
3. For composite metal deck, consisting of metal deck and conventional poured reinforced concrete, steel deck inserts or Metal deck ceiling bolts (T-bars) shall be used. Steel deck inserts shall be of a type that is supported by the concrete slab and not by the metal deck. Inserts size shall conform to the size of the hanger rod. Install inserts before the pouring of the concrete.
4. Expansion bolts shall be installed in snug fitting smoothly drilled holes in accordance with the manufacturer's installation instructions. Expansion bolts shall be installed so that the load acts on the bolts in shear and withdrawal. Expansion bolts shall be carefully located in order to eliminate the risk of damage to concrete, steel reinforcement, and other embedded items. Install in concrete after concrete is placed and completely cured.
5. The Contractor shall take every precaution to furnish and set all sleeves, wood boxes or other devices that are required for proper installation of his work, before concrete is poured.

a. The Contractor is responsible for coordination with other trades and maintaining location of sleeves and inserts during concrete pour.

L. Methods of Fastening: The following rule, except where otherwise specified, shall be observed throughout the entire work: Where fastenings are made to wood, use long screws or lag screw; to brickwork, cement, stone and marble, approved long expansion bolts; to fire-proof block work, approved toggle bolts, and to iron work, approved bolts and nuts. The use of wood plugs and nailing will not be permitted. Sundries used in connection with galvanized iron shall be galvanized. Those in connection with brass work shall be of brass, finished to match the connecting work.

M. Cleaning, painting and installation of hangers and supports shall be done before the application of fireproofing material. All hanger and support assemblies in their entirety shall be rust proofed and painted.

END OF SECTION 22 05 29

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SECTION 22 05 48 – VIBRATION AND SEISMIC CONTROLS FOR PLUMBING PIPING AND EQUIPMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum and (5) the Contract [City of New York Standard Construction Contract].

1.2 SUMMARY

A. The work in this section also includes, but is not limited to the following:
   1. Vibration isolation and seismic bracing for piping.
   2. Equipment isolation bases.
   3. Flexible piping connections.
   4. Seismic bracing for isolated equipment.
   5. Seismic bracing for non-isolated equipment.

B. All plumbing & drainage systems are included. Equipment buried underground is excluded but entry of services through the foundation wall is included. Equipment listed below is typical and is not to be construed as complete.
   1. Tanks (All Types).
   2. Piping.
   3. Water Heaters.
   4. Pumps (All Types).

1.3 SUBMITTAL PROCEDURES

A. Refer to DDC General Conditions Section 01 33 00 “Submittal Procedures” for all submittals.

B. Descriptive Data:
   1. Catalog cuts or data sheets on vibration isolators and specific bracing detailing compliance with the specification.
   2. Detailed schedules of flexible and rigidly mounted equipment, showing vibration isolators and seismic bracing.
   3. Catalog cuts or data sheets on anchors.

C. Shop Drawings:
   1. Submit fabrication details for equipment bases including dimensions, structural member sizes and support point locations.
   2. Provide all details of suspension and support for ceiling hung equipment.
   3. Provide specific details of seismic bracing and anchors; include number, size and locations for each piece of equipment.

4. The sound power levels shall be included with the data submitted for the equipment.
5. House-keeping pad details.

D. Submit welding certificates. Qualify welding procedures and personnel according to AWS D1.1, "Structural Welding Code-Steel".

1.4 QUALITY ASSURANCE

A. Refer to DDC General Conditions Section 01 40 00 "Quality Requirements".

B. Manufacturer's Qualifications: Isolator/Bracing manufacturer shall be regularly engaged in the manufacturing of vibration isolating and seismic restraint materials, whose products have been in satisfactory use in similar service for not less than three years.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Vibration Isolators

1. Manufacturers:
   a. Mason Industries Inc.
   b. Vibration Eliminator Co., Inc.
   c. Vibration Mountings & Controls/Korfund.
   d. International Seismic Application.
   e. Technology (ISAT).
   f. Or approved equal.

2. Elastomeric isolator pads: Oil and water resistant elastomer, arranged in single or multiple layers, molded with a non-slip pattern and galvanized steel baseplates of sufficient stiffness for uniform loading over pad area, and factory cut to sizes that match requirements of supported equipment. The neoprene pads shall be sized for a load of 50 pounds per square inch and shall be a minimum of 5/16" thick.
   a. Material: bridge bearing neoprene, complying with AASHTO M251.
   b. Durometer rating and number of layers as required for stiffness and deflection based on supported load.

3. Elastomeric Mounts: Double deflection type, with molded oil resistant rubber or neoprene isolator elements with factory drilled, encapsulated top plate for bolting to equipment and with baseplate for bolting to structure. Color code or otherwise identify to indicate capacity range.
   a. Durometer rating as required for stiffness and deflection based on supported load.

4. Spring Isolators: Freestanding, laterally stable, open spring isolators.
   a. Outside spring diameter not less than 80% of the compressed height of the spring at rated load.

b. Minimum additional travel shall be 50% of the required deflection at rated load.
c. Lateral stiffness shall be more than 80% of the rated vertical stiffness.
d. Overload capacity: Support 200% of rated load, fully compressed, without deformation or failure.
e. Baseplates: Factory drilled for bolting to structure and bonded to 5/16" minimum thick rubber isolated pad attached to baseplate underside. Baseplates shall limit floor load to 50psig.
f. Top Plate and Adjustment Bolt: Threaded top plate with adjustment bolt and cap screw to fasten and level equipment.

5. Restrained Spring Isolators: Freestanding, steel, open spring isolators with seismic restraint.
   a. Housing: Steel with resilient vertical limit stops to prevent spring extension due to wind loads or if weight is removed; factory drilled baseplate bonded to 5/16" minimum thick elastomeric isolator pad attached to baseplate underside; and adjustable equipment mounting and leveling bolt that acts as blocking during installation.
   b. Outside Spring Diameter: Not less than 80% of the compressed height of the spring at rated load.
   c. Minimum Additional Travel: 50% of the required deflection at rated load.
   d. Lateral Stiffness: More than 80% of the rated vertical stiffness.
   e. Overload Capacity: Support 200% of rated load, fully compressed, without deformation or failure.
   f. Housing shall be designed to resist all seismic forces. Mountings shall be tested and certified in accordance with ICC-ES AC 156 certifying the maximum certified horizontal and vertical load ratings.

6. Housed Spring Mounts: Housed spring isolator with integral seismic snubbers.
   a. Housing: Ductile iron or steel housing to provide all directional seismic restraint.
   b. Base: Factory drilled for bolting to structure.
   c. Snubbers: Vertically adjustable to allow a maximum of 1/4" travel before contacting a resilient collar.
   d. Mountings shall be tested and certified in accordance with ICC-ES AC 156 certifying the maximum certified horizontal and vertical load ratings.

7. Elastomeric Hangers: Double-deflection type, with molded oil resistant rubber or neoprene isolator elements bonded to steel housings with threaded connections for hanger rods. Color code or otherwise identify to indicate capacity range.

8. Spring Hangers: Combination coil spring and elastomeric insert hanger with spring and insert in compression.
   a. Frame: Steel fabricated for connection to threaded hanger rods and to allow for a maximum of 30 degrees of angular hanger rod misalignment without binding or reducing isolator efficiency.
   b. Outside Spring Diameter: Not less than 80% of the compressed height of the spring at rated load.
   c. Minimum Additional Travel: 50% of the required deflection at rated load.
   d. Lateral Stiffness: More than 80% of the rated vertical stiffness.
   e. Overload capacity: Support 200% of rated load, fully compressed, without deformation or failure.

f. Elastomeric Element: Molded, oil resistant neoprene or rubber. Steel washer reinforced cup to support spring and bushing projecting through bottom of frame.

9. Pipe Riser Resilient Support: All-directional acoustic pipe anchor consisting of two steel tubes separated by a minimum of 1/2" thick, 60 durometer neoprene. Include steel and neoprene vertical limit stops arranged to prevent vertical travel in both directions for a maximum load on the isolation material of 500 psig and for equal resistance in all directions.

10. Resilient Pipe Guides: Telescopic arrangement of two steel tubes separated by a minimum of 1/2" thick 60 durometer neoprene. Factory set guide height with a shear pin to allow vertical motion due to pipe expansion and contraction. Shear pin shall be removable and re-insertable to allow for selection of pipe movement. Guides shall be capable of motion to meet location requirements.

11. Expansion/Screw/Adhesive Anchors: Anchors in concrete or masonry shall be in accordance with ASCE 7-10 Section 13.4.2.
    a. As a minimum, all anchors exposed to weather or embedded in masonry are to be Type 316 stainless steel.
    b. Anchors installed in concrete shall have current ICC-ES listing for performance in cracked concrete as per Section BC 1912 of the NYC Building Code.
        1) Wedge Expansion and Undercut Anchors/ expansion bolts/screw anchors shall have an ICC-ES Evaluation Service Report (ESR) issued in accordance with ICC-ES AC 193 for use in cracked concrete, including seismic applicability loading.
        2) Adhesive anchors in concrete shall have an ICC-ES Evaluation Service report (ESR) issued in accordance with ICC-ES AC 308 for use in cracked concrete, including seismic applicability loading, and pursuant to the Office of Technical Certification and Research (OTCR) Building Bulletin 2009-019.

12. Stud wedge anchors shall be epoxy adhesive based and manufactured from full diameter wire, not from undersized wire that is "rolled up" to create the thread. The stud anchor shall also have a safety shoulder which fully supports the wedge ring under load. The stud anchors shall be tested and certified in accordance with ICC-ES AC 156 verifying its allowable loads.

13. Female wedge anchors are preferred in floor locations so isolators or equipment can be slid into place after the anchors are installed. Anchors shall be epoxy adhesive based and manufactured from full diameter wire, and shall have a safety shoulder to fully support the wedge ring under load. Female wedge anchors shall be tested and certified in accordance with ICC-ES AC 156 verifying their allowable loads.

14. Flexible spherical expansions joints shall employ peroxide cured EPDM in the covers, liners and tire cord friction. Any substitutions must have equal or superior physical and chemical characteristics. Solid steel rings shall be used within the raised face rubber flanged ends to prevent pullout. Flexible cable bead wire is not acceptable. Sizes 2" and larger shall have two spheres reinforced with a ductile iron external ring between spheres. Flanges shall be split ductile iron or steel with hooked or similar interlocks. Sizes 16" to 24" may be single sphere. Sizes 3/4" to 1½" may have threaded two piece bolted flange assemblies, one sphere and cable retention. Connectors shall be rated at 250 psi up to 170o F with a uniform drop in allowable pressure to 215 psi at 250oF in sizes through 14". 16" through 24" single sphere minimum ratings are 180 psi at 170oF and 150 psi at 250oF. Higher rated

connectors may be used to accommodate service conditions. All expansion joints must be factory tested to 150% of rated pressure for 12 minutes before shipment. Safety factors to burst and flange pullout shall be a minimum of 3/1. Concentric reducers to the above ratings may be substituted for equal ended expansion joints.

15. Expansion joints shall be installed in piping gaps equal to the length of the expansion joints under pressure. Control rods need only be used in unanchored piping locations where the manufacturer determines the installation exceeds the pressure requirement without control rods. If control rods are used, they must have ½" thick Neoprene washer bushings large enough in diameter to take the thrust at 1000 psi maximum on the washer area.

16. Submittals shall include two test reports by independent consultants showing minimum reductions of 20 DB in vibration accelerations and 10 DB in sound pressure levels at typical blade passage frequencies on this or a similar product by the same manufacturer. All expansion joints shall be installed on the equipment side of the shut off valves.

17. Flexible stainless steel hose shall have stainless steel braid and carbon steel fittings. Sizes 3" and larger shall be flanged. Smaller sizes shall have male nipples.

18. Hoses shall be installed on the equipment side of the shut-off valves horizontally and parallel to the equipment shafts wherever possible.

19. Housekeeping pad anchors shall consist of a ductile iron casting that is tapered and hexagonal, smaller at its base than at its top. The upper portion shall have holes for rebar to pass through. The anchor shall be continuously threaded from top to bottom for the attachment of soleplates. Housekeeping pad anchors shall be attached to the structural slab using a stud wedge anchor.

B. Vibration Isolation Equipment Bases

1. Manufacturers
   a. Mason Industries Inc.
   b. Vibration Eliminator Co., Inc.
   c. Vibration Mountings & Controls/Korfund.
   d. International Seismic Application Technology (ISAT).
   e. Or approved equal.

2. Steel base: Integral structural steel base shall be provided. Independent steel rails are not permitted on this project. All perimeter members shall be steel beams with a minimum depth equal to 1/10 of the longest dimension of the base. Base depth need not exceed 14" provided that the deflection and misalignment is kept within acceptable limits as determined by the manufacturer.
   a. Lowest possible mounting height with not less than 1-inch clearance above the floor. Include equipment anchor bolts and auxiliary motor slide bases or rails. Include supports for suction and discharge elbows for pumps.
   b. Structural Steel: Steel shapes, plates, and bars complying with ASTM A36/A 36M. Bases shall have shape to accommodate supported equipment.
   c. Support Brackets: Factory welded steel angles on frame for outrigger isolation mountings and to provide for anchor bolts and equipment support.

3. Inertia Base: Integral factory fabricated, welded structural steel bases and rails ready for field applied cast in place concrete. Independent steel rails are not permitted on this project.
   a. Lowest possible mounting height with not less than 1-inch clearance above the floor. Include equipment anchor bolts and auxiliary motor slide bases or rails. Include supports for suction and discharge elbows for pumps. Bases shall be a minimum of 1/12 of the longest dimension of the bases but not less than 6". The base depth need not exceed 12" unless specifically recommended by the base manufacturer for mass or rigidity. Forms shall include minimum concrete reinforcing consisting of 1/2" bars welded in place on 6" centers running both ways in a layer 1½" above the bottom.
   b. Structural Steel: Steel shapes, plates, and bars complying with ASTM A36/A36M. Bases shall have shape to accommodate supported equipment.
   c. Support Brackets: Factory welded steel angles on frame for outrigger isolation mountings and to provide for anchor bolts and equipment supports.
   d. Fabrication: Fabricate steel templates to hold equipment anchor bolt sleeves and anchors in place during placement of concrete. Obtain anchor bolt templates from supported equipment manufacturer.

4. Equipment anchor bolts with bottom plates and pipe sleeves shall be preset.

PART 3 - EXECUTION

3.1 EXECUTION REQUIREMENTS

A. Refer to DDC General Conditions for the requirements governing execution.

3.2 INSTALLATION

A. At each equipment location, provide the required deflection under the imposed load to produce uniform loading and deflection even when equipment weight is not evenly distributed. Springs shall be installed so that the ends remain parallel during and after spring deflection to operating height. Jack inertia blocks and bases into position and wedge in place before spring loading; leveling bolts shall not be used as jacking screws. After equipment is in place and springs are loaded through leveling bolts, remove wedges and jacks. Isolators shall be suitable for the lowest operating speed of the equipment. Vertical limit stops shall be out of contact during normal operation.

B. Where the floor is waterproofed or finished with waterproof cement, install seismic restraints and vibration isolation in such manner that the waterproofing is not damaged.

C. Isolation equipment shall be in accordance with the following table:

LOWEST RPM	INCHES DEFLECTION (MIN.)	% EFFICIENCY	TYPE
1750 & over	.25 neoprene	95%	Single-in-shear
1200-1749	.50	95%	Double neoprene in shear
1000-1199	.75	95%	Spring
570-999	1.25	90-95	Spring
520-569	1.5	90	Spring
330-519	2.0	80-90	Spring
Up to 329	3.5	80	Spring

D. Install combination spring and double deflection neoprene position hangers on the suction and discharge piping at each circulating pump. Each hanger shall be located on the pump side of the flexible hose connection.

E. All water heaters supported on floors directly above a story having occupied spaces shall be supported on resilient isolators having a minimum static deflection of 1". The isolators shall be installed directly under the structural frame of the water heater.

3.3 SCHEDULE

A. Provide vibration isolation supports for Plumbing equipment as indicated in this schedule. Contractor shall submit a schedule for approval by Commissioner indicating the type of support for each item of Plumbing & Drainage Equipment.

EQUIPMENT	LOCATION	TYPE OF SUPPORT
Pump, all H.P.	Cellar/basement	None required
Pump, 3 H.P. or more	Upper floor	Inertia block
Pump, under 3 H.P.	Upper floor	None required
Pipe, water deflecting	At pumps hanger	Spring and double

3.4 GENERAL

A. All vibration isolators and seismic bracing systems must be installed in strict accordance with the manufacturers written instructions and all certified submittal data.

B. Installation of vibration isolators and seismic bracing must not cause any change of position of equipment or piping resulting in stresses or misalignment.

C. No rigid connections between equipment and the building structure shall be made that degrades the noise and vibration control system herein specified.

D. The contractor shall not install any equipment or piping that makes rigid connections with the building unless isolation is not specified. "Building" includes, but is not limited to, slabs, beams, columns, studs and walls.

E. Coordinate work with other trades to avoid rigid contact with the building.

F. Any conflicts with other trades that will result in rigid contact with equipment or piping due to inadequate space or other unforeseen conditions should be brought to the Commissioner's attention prior to installation. Corrective work necessitated by conflicts after installation shall be at the responsible Contractor's expense.

G. Bring to the Commissioner's attention any discrepancies between the Contract Documents and the field conditions or changes required due to specific equipment selection, prior to installation. Corrective work necessitated by discrepancies after installation shall be at the Contractor's expense.

H. Correct, at no additional cost, all installations which are deemed defective in workmanship and materials.

I. At locations where cable or seismic solid brace restraints are located, the gravity support rods must be braced when necessary to accept compressive loads by clamping with steel angles that are sized to prevent the buckling of the rods. A minimum of three ductile iron clamps shall be used. Welding of support rods is not acceptable.

J. Vibration isolation manufacturer shall furnish integral structural steel bases (or inertia bases) as required. Independent steel rails are not permitted.

K. Hand built elastomeric expansion joints may be used when pipe sizes exceed 24" or specified movements exceed support capabilities.

L. Locate isolation hangers as near to the overhead support structure as possible.

M. When the equipment sound levels exceed the specified noise criteria, removable acoustical enclosures, alterations to the equipment, or other approved means shall be provided to reduce equipment sound level to that specified.

3.5 VIBRATION ISOLATION OF PIPING

A. Horizontal pipe isolation: The first three pipe hangers in the main lines near a plumbing & drainage equipment shall be pre-compressed spring and neoprene type hangers. Pre-compressed spring and neoprene

type hangers must also be used in all transverse braced isolated locations. Horizontal runs in all other locations throughout the building shall be isolated by spring and neoprene hangers that need not be pre-compressed. Floor supported piping shall rest on isolators. Heat exchanger's and expansion tanks are considered part of the piping run. The first three isolators from the isolated equipment will have the same static deflection as specified for the mountings under the connected equipment. If piping is connected to equipment located in basements and hangs from ceilings under occupied spaces, the first three hangers shall have 0.75" deflection for pipe sizes up to and including 3",

B. 1½" deflection for pipe sizes up to and including 6", and 2½" deflection thereafter. Hangers shall be located as close to the overhead structure as practical. Where piping connects to mechanical equipment, install expansion joints or stainless steel hoses if expansion joints are not suitable for the service.

C. Riser isolation: Risers shall be suspended from spring and neoprene hangers or supported by spring mountings, anchored with all-directional anchors equipped with neoprene isolation and washers, and guided with vertical sliding guides. Steel spring deflection shall be a minimum of 0.75". Consideration shall be given to those expansion locations where additional deflection is required to limit load changes to + 25% of the initial load. Submittals must include riser diagrams and calculations showing anticipated expansion and contraction at each support point, initial and final loads on the building structure, spring deflection changes and seismic loads. Submittal data shall include certification that the riser system has been examined for excessive stresses and that none will exist in the proposed design.

END OF SECTION 22 05 48

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SECTION 22 05 53 – IDENTIFICATION FOR PLUMBING PIPING AND EQUIPMENT

PART 1 - GEN ERAL

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: Piping and Equipment Identification and Tags requirements

B. Work of this Section includes the following:
   1. Tags.
   2. Accessories.
   3. Charts and Frames.
   4. Pipeline Identification.

1.3 SUBMITTAL PROCEDURES

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 Drawing:
   1. Provide list of identification wording, symbols, letter size, and color coding.
   2. Valve numbering scheme; valve Schedules: For each piping system to be included in maintenance manuals.

D. Samples: Submit samples of tags and identification markers for each different type of service. Samples shall be submitted and approved before installation.

1.4 QUALITY ASSURANCE

A. Refer to DDC General Conditions Section 01 40 00 “Quality Requirements”.

PART 2 - PRODUCTS

2.1 MATERIALS

A. TAGS

1. All controlling valves on hot water, circulation, cold water and gas supply pipes throughout the building, except those at fixtures, shall be furnished with heavy brass tags 2" in diameter, with numbers and the words "Hot", "Circ.", "Cold" or "Gas" thereon. The numbers and letters shall be of the block type, indented and filled with durable black compound. The letters shall be 1/4" high and the numbers shall be 1/2" high. The tags on circulation (Circ) pipe valves shall be numbered the same as the hot water valve controlling the riser or branch to which the circulation pipe is connected.
2. Tags shall be as manufactured by Seton Nameplate Corp., Brimar Industries, Inc., Marking Services Inc., EMED Co., Inc. or approved equal

B. CHARTS AND FRAMES

1. The numbers on valves for hot, circ., cold and gas shall be arranged in the following manner:
   a. In cellar or basement commencing with No. 1
   b. In the first story commencing with No. 100
   c. In the second story commencing with No. 200
   d. In the third story commencing with No. 300
   e. In the fourth story commencing with No. 400
   f. In the fifth story commencing with No. 500
   g. In penthouses commencing with No. 600
2. If it should occur that the number of valves on any floor exceed the number of tags provided for said floor, then a letter must be added which would read, for example 100A or 100B, and so on, until all valves on the floor are properly numbered, but in no case shall a number be applied other than as herein stated.
3. The number of each and every valve throughout the building shall be plainly typed on approved heavy paper. Opposite each number shall be set the location of the valve bearing that number, also the fixture or fixtures controlled by that valve. The charts shall be framed in an approved glazed frame. The frames shall be made of 1" wide oak picture molding with wood back, and shall be finished with natural color varnish with screw-eyes and wire for hanging same, and shall be submitted to the Commissionerfor approval before installation.

C. PIPELINE IDENTIFICATION

1. Identification shall be in accordance with “Scheme for Identification of Piping System ANSI A13.1" and OSHA safety color regulation.
2. Markers shall be snap-on type as manufactured by Seton Nameplate Corp., (Setmark System) EMED Co., Inc., Brimar Industries, Inc., Marking Services Inc. or approved equal Markers shall completely encircle the pipe with a substantial overlap. No adhesive shall be used. They shall be manufactured of UL approved, self-extinguishing plastic. When the pipe including insulation (if any) is 6" diameter and larger, markers shall be strap on type.
3. Provide per below schedule.

D. STENCIL SCHEDULE

SERVICE	STENCIL	BACKGROUND COLOR
Cold Water	Cold Water	Green
Cold Water	Cold Water	Green
Make-up	Make-up	
Hot Water	Hot Water 105°F	Yellow
Hot Water (Kitchen)	Hot Water 140°F	Yellow
Hot Water Circulating	Hot Water Cir. 105°F	Yellow
Hot Water Circulating (Kitchen)	Hot Water Cir. 140°F	Yellow
Pump Discharge	Pump Disch	Green

1. The nature of service of all machinery, equipment, tanks, pumps, and other apparatus shall be stenciled in 2" high letters unless otherwise directed.

E. ACCESSORIES
1. Accessories for attaching tags to their respective hot, circ., cold, and gas valves shall include solid brass jack chain with adjustable open and close links and solid brass S-Hooks.
2. Jack chains and S-hooks shall be as manufactured by Seton Nameplate Corp., EMED Co., Inc., Brimar Industries, Inc., Marking Services Inc. or approved equal.

PART 3 - EXECUTION

3.1 EXECUTION REQUIREMENTS

A. Refer to DDC General Conditions for the requirements governing execution.

B. Attach solid brass tags to their respective hot, circ., cold and gas valves with jack chain and S-Hooks.

C. Hang the charts and frames where directed, as follows:
1. One (1) in Boiler Room or Mechanical Room.
2. One (1) in Building Management Office.
3. One (1) on each floor.

END OF SECTION 22 05 53

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SECTION 22 07 00 – PLUMBING INSULATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum and (5) the Contract [City of New York Standard Construction Contract].

1.2 SUMMARY

A. Section includes:
   1. Non-conducting insulation, including accessories, on the following piping and apparatus
      a. All concealed and exposed hot water supply piping (which is not laid in the ground) including circulation and booster piping, tempered water piping, flanges, fittings and valves.
      b. All concealed and exposed cold water supply piping (which is not laid in the ground) including flanges, fittings and valves.
      c. All concealed and exposed horizontal runs and off-sets of storm water piping, except when laid in the ground or when located in non-occupied spaces in the basement. All fittings and vertical off-sets associated with the foregoing pipe shall also be insulated.

1.3 SUBMITTAL PROCEDURES

A. Refer to DDC General Conditions Section 01 33 00 “Submittal Procedures” for all submittals.

B. Submit manufacturer's product data for insulation materials, adhesives, mastics and cements. Include installation details for valves, fittings, pipes and all other item to be insulated. No material shall be delivered to the site prior to being approved.

C. Schedule listing items to be insulated, description of insulation and finishing procedures.

D. Certificates from the manufacturer stating compliance with the following:
   1. Insulation, finishing facings or jackets, adhesives, mastics and cements are asbestos free and all materials installed have composite fire and smoke hazard ratings, 25 & 50 respectively, to meet the requirements of the Building Code of the City of New York.

E. Contractor Qualifications.

1.4 QUALITY ASSURANCE

A. Refer to DDC General Conditions Section 01 40 00 “Quality Requirements”.

B. Installer's Qualifications: Firm with at least three years of successful installation experience on projects with the piping and equipment insulation similar to that required for this Project.

C. Regulatory Requirements

1. All insulation, vapor barriers, as well as the adhesives and finishing facings or jackets used herewith shall have a flame spread rating not over 25 without evidence of continued progressive combustion, and shall have a smoke developed rating not higher than 50. Flame spread rating and smoke developed rating shall be as defined in the N.Y.C. Building Code. All materials installed shall have composite fire and smoke hazard ratings to meet requirements of that Code.

D. Asbestos Prohibition

1. All products provided under this Section shall be asbestos, lead and mercury free.

1.5 DELIVERY, STORAGE AND HANDLING

A. Deliver insulation, coverings, cements, adhesives and coatings to the site in factory-fabricated containers with the manufacturer's stamp, or label, affixed showing fire hazard ratings of the products and brand.

B. Store insulation in original wrappings and protect from any damage.

1.6 TEMPERATURE REQUIREMENT

A. Apply adhesive, sealers, coating, and all other items and accessories at the proper temperature as recommended by the manufacturer. If ambient conditions are not acceptable, provide temporary heat as required for proper installation without any delay to the Project completion.

1.7 COORDINATION

A. Coordinate size and location of supports, hangers, and insulation shields

B. Coordinate clearance requirements with piping installer for piping insulation application and equipment installer for equipment insulation application. Establish and maintain clearance requirements for installation of insulation and field-applied jackets and finishes and for space required for maintenance.

C. Coordinate installation and testing of heat tracing.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Insulation, fiberglass fitting cloth, bands and casings (predicated on meeting the specification requirements
1. Certain-Teed Corp.

2. Johns Manville, Owens-Corning Fiberglass Corp.
3. Knauf Insulation.
4. Armacell LLC; AP Armaflex.
5. Pittsburgh Corning Corp.
6. Or approved equal

B. Adhesives (predicated on meeting the specification requirements)
1. Benjamin Foster Co.
2. Epolux Manufacturing Corp.
3. Armacell LLC
4. Insul-Coustic (Division of Birma Products Corp.)
5. Or approved equal

C. Vapor barrier and weatherproofing jacket (predicated on meeting the specification requirements) (minimum of three)
1. Venture Tape Corp.
2. Polyguard Products Inc
3. Knauf Insulation.
4. Or approved equal

2.2 MATERIALS

A. Adhesives and Sealants for Insulation: All adhesives and sealants used on interior building insulation shall comply with the South Coast Air Quality Management District (SCAQMD) Rule #1168; VOC limits shall comply with the limits of The New York City Environmentally Preferable Purchasing (EPP) Minimum Standards for Goods.

B. Products shall not contain asbestos, lead, mercury, or mercury compounds.

C. Foam insulation materials shall not use CFC or HCFC agents in the manufacturing process.

D. Piping Insulation
1. One-piece molded sectional fiberglass: Nominal 4-pound density. Its thermal conductivity shall have a range between 0.25 - 0.29 BTU per inch/h x ft2 x °F. Insulations shall have factory-applied all-service jacket (ASJ) and adhesive used to adhere the jacket to the insulation. It shall be suitable for use on piping up to 200°F.
2. Fiber Free Elastomeric Foam: Shall be closed-cell material with a thermal conductivity that ranges between 0.25-0.29 BTU per inch/h x ft2 x °F and suitable for use on piping up to 200ºF.
3. Fiberglas Paper-Free ASJ Pipe Insulation: Molded fibrous glass pipe insulation with factory applied paper free all service jacket and double adhesive lap seal closure system, rated for a maximum service temperature of 850ºF. Thermal conductivity for paper-free fiberglass shall range between 0.25-0.29. Circumferential joints shall be sealed with paper free butt strips that are compatible with the required facing. Stapling shall not be required to complete the closure. Manufacturer's data regarding thickness constraints in relation to operating temperature shall be followed. On cold systems, vapor barrier shall be provided. All penetrations and exposed ends of insulation shall be sealed with mold resistant vapor barrier mastic.
a. Insulation and accessories

4. For valves, fittings, etc. for hot water piping, cold water piping, drainage and vent piping shall include the following:
   a. One-pound density fiberglass blanket.
   b. Segments of pipe insulation.
   c. Pre-molded fiberglass fittings.
   d. No. 20 gage galvanized steel annealed wire.
   e. Insulating cement.
   f. In lieu of the cement coat, and fiberglass blanket material or segment of pipe insulation on valves and fittings; an ultra violet resistant, 20-mil thick, one-piece PVC fitting cover with pre-cut insulation inserts, HI-Lo-Temp,
5. For water meters, provide the following:
   a. 1.5-pound density fiberglass blanket.
   b. 2" hexagonal galvanized mesh wire.
   c. Insulating cement.
6. For hot water reservoirs, booster heaters and pressure tanks, the following shall be provided: (for replacement use only)
   a. Calcium silicate blocks, l½" thick, minimum 12-pound density.
   b. No. 12 gage galvanized steel annealed wire
   c. 1" hexagonal galvanized wire mesh.
   d. Welded studs, clips or angles
   e. Insulating and finishing cement.

E. Jacket and accessories
1. Over insulation on hot water piping, install the following:
   a. White kraft paper outer surface bonded to aluminum foil and reinforced with fiberglass yarn.
   b. Outward clinch coated 9/16" staples.
   c. 3/4" wide aluminum bands.
   d. Aluminum casing, 0.16" thick.
   e. PVC Plastic: one-piece molded type fitting covers and jacketing material, gloss white. Connections: Tacks, pressure sensitive color matching vinyl tape.
2. Over insulation on valves, fittings, etc. for hot water piping, include the following:
   a. Fiberglass fitting cloth which shall be 20 X 20 yarns per inch fiberglass mesh.
   b. PVC Plastic: one-piece molded type fitting covers and jacketing material, gloss white. Connections: Tacks, pressure sensitive color matching vinyl tape.
3. Over insulation for cold water piping, drainage and vent piping, install the following:
   a. White kraft paper outer surface bonded to aluminum foil and reinforced with fiberglass yarn.
   b. Insulation adhesive.
   c. Aluminum casing, .016" thick.
   d. Elastomeric closed cell fiber free foam with no vapor barrier is also acceptable.
   e. Vapor barrier and weatherproofing jacket shall be a laminated five-ply self-adhesive material; weather resistant, high puncture and tear resistant. The product shall be used both indoors and outdoors, shall have zero permeability, and shall be manufactured with mold inhibitors:
4. Over insulation on valves and fittings for drainage and vent piping and over valves, fittings, water meters for cold water, the following shall be included:
   a. Glass cloth.

F. Special protection: At all points of support the following shall be included:

1. Rigid calcium silicate pipe insulation having a minimum twelve (12) pound density. Blocks shall be 1½" thick.
2. Galvanized metal shields shall be 18 gage for pipe sizes up to and including 5" and 16 gage for larger sizes.

PART 3 - EXECUTION

3.1 EXECUTION REQUIREMENTS

A. Refer to DDC General Conditions for the requirements governing execution.

B. Insulation shall be installed only after tests of the piping systems have been successfully completed.
1. Valves shall be insulated up to the packing unit.
2. Unions shall not be insulated.
3. Fire Seal Application: Where pipes pass through fire walls, fire partitions, fire rated pipe chase walls or floors above grade, insulation shall pass through and a UL classified assembly shall be provided.
4. All necessary insulating material not specified shall be as recommended by the manufacturer of the insulation.

3.2 INSTALLATION

A. Thermal Insulation for Piping
1. Hot Water Piping
   a. Temperature range from 105°F to 140°F
      1) 1" thick insulation for pipe sizes less than 1½" pipe diameter
      2) 1½" thick insulation for pipe sizes 1½" in diameter and up to 8" pipe diameter
   b. Temperature range from 141°F to 200°F
      1) 1½" thick insulation for pipe sizes less than and including 1" pipe diameter
      2) 22" thick insulation for pipe sizes 1½" in diameter and up to 8" pipe diameter.
2. Cold Water Piping
   a. 1" thick insulation for pipe sizes up to and including 2" in diameter.
   b. 1½" thick insulation for pipe sizes larger than 2" in diameter.
3. Insulation for horizontal runs and off-sets including fittings and vertical off-sets of storm water piping shall be of the thickness specified for cold water piping.
4. Valves, fittings, etc. for hot & cold water piping shall be insulated as follows:
   a. For pipe sizes smaller than 4", wrap firmly under a minimum of a 3:1 compression, with 1-pound density fiberglass blanket, to a thickness equal to adjoining insulation. Secure with No. 20 gage galvanized steel annealed wire. Finish with a smooth coat of insulating cement. In addition, insulating cement (except for cold water) applied in thickness equal to the adjoining pipe insulation material may also be used on valves & fittings.
   b. For pipe sizes 4" and larger, fit segments of pipe insulation equal in thickness to adjoining insulation and secure with No 20 gage galvanized annealed steel wire. Finish with a smooth coat of insulating cement.

c. In lieu of the foregoing methods, the use of pre-molded fiberglass fittings of the same thickness as adjoining pipe insulation will be accepted. Secure with No. 20 gauge galvanized annealed steel wire and finish with a smooth coat of insulating cement.

d. In lieu of the above a, b and c, the use of pre-formed PVC fitting covers with factory pre-cut Hi-Lo Temp insulation insert of the same thickness as adjoining pipe insulation will be accepted.

e. Valves, fittings, etc. shall be insulated by applying the PVC fitting covers of the same thickness as adjoining pipe insulation with the proper factory precut Hi-Lo Temp insulation insert to the pipe fitting, valve, etc. The ends of the Hi-Lo Temp insulation insert shall be tucked snugly into the throat of the fitting, valve etc. and the edges adjacent to the pipe covering tufted and tucked in, fully insulating the pipe fitting, valve, etc. The PVC fitting cover [in conjunction with a mastic vapor barrier for cold water only] shall then be applied and shall be secured by tack fastening, and then taping the ends to the adjacent pipe covering. Where the operating temperature exceeds 250°F, 2 or more layers of the Hi-Lo Temp insulation inserts shall be applied prior to the installations of the PVC cover. The first layer shall be applied with a few wrappings of fiberglass yarn to eliminate voids or hot spots.

5. All water meters shall be covered with a 1", 1.5-pound density fiberglass blanket under a minimum of 3:1 compression. Over this insulation use a 2" hexagonal galvanized mesh wire, tightly stretched and secured in place with edges tied together. Finish with approved insulating cement 1/4" thick in one coat, troweled to a smooth finish.

B. Facing or Jackets

1. Hot Water Piping

a. Insulation on concealed and exposed hot water piping shall have a jacket of white kraft paper outer surface bonded to aluminum foil and reinforced with fiberglass yarn. Longitudinal laps shall be secured with outward clinch coated 9/16" staples on 4" maximum centers. Circumferential joints shall be firmly butted and wrapped with a 3" minimum wide strip of the jacketing material securely stapled in place. In lieu of staples, longitudinal laps and circumferential joint butt strips may be smoothly secured with lagging adhesive. Jackets shall be additionally secured with 3/4" wide aluminum bands installed on 12" (maximum) centers.

b. Insulation on hot water valves, fittings, etc., shall have a jacket of fiberglass fitting cloth smoothly adhered with lagging adhesive. Lap cloth on itself and adjoining insulation facing. Lap shall be 1" on pipe sizes up to and including 3" and 2" on large pipe sizes.

2. Cold Water Piping

a. Insulation on piping shall have a vapor barrier jacket of white kraft paper outer surface bonded to aluminum foil and reinforced with fiberglass yarn or of self-adhesive material. Longitudinal laps and butt strips shall be smoothly secured with insulation adhesive. Vapor barrier jackets on insulation must be applied with a continuous unbroken vapor seal. The use of staples on vapor barrier jacketed insulation is not permitted. The use of Elastomeric closed cell fiber free foam with no vapor barrier is acceptable.

b. Insulation on valves, fittings, water meter, etc., shall be vapor sealed by applying glass cloth embedded between two 1/16" thick coats of vapor barrier coating. Lap seal glass cloth at least 2" on itself and the adjoining insulation

c. The ends of cold water pipe insulation shall be sealed off at all flanges, fittings, valves and interval of 21' on continuous runs of pipe with fire resistant vapor barrier coating BF 30-80.

3. Horizontal Drainage Lines

a. Insulation on horizontal runs and off-sets including fittings, vertical off-sets of storm water piping shall have a vapor barrier jacket as described for cold water piping in subparagraph 2 above. The use of Elastomeric closed cell fiber free foam with no vapor barrier is acceptable.
b. The ends of drainage pipe insulation shall be sealed off at all fittings and at intervals of 21 feet on continuous run of pipe with fire resistant vapor barrier coating BF 30-80.

C. Insulation and Protection at Points of Support
1. Install inserts made from rigid calcium silicate pipe insulation, in lieu of pipe insulation specified in Paragraph A above, at all points of support. Inserts shall be not less than 12" long and of thickness equal to adjoining insulation. A jacket shall be installed over the insert with longitudinal laps and butt strips for circumferential joints smoothly secured with insulation adhesive. Jacket shall provide vapor barrier where required.
2. Install galvanized steel shields between supports and inserts. Shields shall be formed to fit the insulation and shall extend up to the center line of the pipe and of the length specified for the inserts. Supports shall not pierce the insulation and all vapor barriers shall be unbroken and continuous.

D. Insulation and Jackets for Tanks
1. Tanks shall be covered with 1½" thick calcium silicate blocks tightly butted and joints staggered. Blocks shall be held in place with No. 12 gage galvanized steel wire on 12" maximum centers. Install studs, clips or angles welded to the tank for the purpose of securing the wire to the tank. Install 1" hexagonal galvanized mesh over the block insulation. Mesh shall be stretched tight with edges tied together and secured with No. 12 gage galvanized steel wire to the anchors. Apply in one coat over the mesh, a 1/2" thick layer of insulating and finishing cement and trowel to a smooth finish.
2. For tanks storing hot water, install a jacket of fiberglass fitting cloth smoothly adhered with lagging adhesive over the insulating and finishing cement. The cloth shall lap on itself and the adjoining pipe insulation facing. Lap shall be 2".
3. For tanks storing cold water, install a jacket of fiberglass fitting cloth embedded between two 1/16" thick coats of vapor barrier coating over the insulating and finishing cement. The cloth shall lap on itself and the adjoining pipe insulation facing. Lap shall be 2". The use of vapor barrier and weatherproofing jacket will be accepted. The use of Flexible Elastomeric closed cell foam sheet or roll insulation to cover tanks is acceptable.

E. Protection of Piping Exposed to Freezing Temperatures: Piping to be frost proofed (heat traced) shall be insulated with two layers of molded fiberglass pipe insulation. Thickness of each layer shall be 1" thick for pipe sizes up to and including 2" and 1½" thick for larger pipe sizes. The outer layer shall be jacketed as specified for cold water piping in Paragraph 3.02 B of this Section. The final insulation shall be protected with not lighter than 0.016" aluminum casing. Where this piping is installed within a furred enclosure or room the casing shall be omitted. All water and waste piping in backflow preventer rooms in which RPZ discharges outside building above grade, shall have electric heat tracing cable installed on the piping prior to piping being covered by insulation

3.3 PROTECTION AND REPLACEMENT

A. Replace insulation damaged during construction which cannot be repaired satisfactorily, including units with vapor barrier damage and moisture saturated units.

B. Protection

1. Insulation worker shall advise Contractor of required protection for insulation work during remainder of construction period, to avoid damage and deterioration.

3.4 PAINTING

A. Insulation on all piping and fittings, exposed in Boiler Room, Mechanical Spaces and Fan Rooms, shall be given two (2) coats paint.

B. Insulation on all piping and fittings, exposed in finished spaces shall be given two (2) coats of paint, the color of which shall match the adjacent surroundings.

3.5 LABELING

A. After the finished coat of paint has been applied to the insulation, this contractor shall do all pipeline identification labeling.

END OF SECTION 22 07 00

SECTION 22 08 00 - COMMISSIONING FOR PLUMBING 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. Commissioning consists of systematically documenting that specified components and systems have been installed and started up properly and then functionally tested to verify and document proper operation through all sequences of operation and conditions. In addition, instruction of The City of New York's Operations Personnel will be verified and final project O&M Documents will be reviewed for completeness.

1.3 QUALITY ASSURANCE

A. Reference Standards:
   1. OSHA Part 1910; Subpart S. 1910.308.
   2. American National Standards Institute: ANSI
   3. American Society for Testing and Materials: ASTM
   4. National Electrical Manufacturers Association: NEMA
   5. National Fire Protection Association: NFPA
      a. National Electrical Code (NEC)

B. All inspections and tests shall use the following references.
   1. Contract Specifications.
   2. Contract Drawings.
   3. Manufacturer's instruction manuals and approved shop drawings for applicable equipment.

PART 2 - PRODUCTS

2.1 EQUIPMENT AND INSTRUMENTS for Cx process

A. The Contractor shall furnish all tools, instruments, laptops, calibrated meters, software programs, personnel, and services required to perform the commissioning process. This includes providing the connection to systems to be tested, temporary alterations for test purposes, calibrations, operation of the test equipment & instrumentation and generating test results (as required), and the restoration of equipment/systems to original operating condition. A list of all tools and equipment to be used during commissioning shall be submitted to the CxA for approval. The Contractor shall furnish necessary utilities for the commissioning process.

B. 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. Proprietary test equipment (and software) shall become the property of The City of New York upon completion of the commissioning process

2.2 COMMISSIONING DOCUMENTATION

A. All documentation for the commissioning process shall be entered into the CxA's commissioning project progress tracking software tool. The Contractor will be allowed web-based access to the software upon request. Additionally, the Contractor may download the CxA's mobile application to a tablet format. The mobile application is available in Apple, Android, and Windows format. There is no fee associated with the software or the mobile application. Contractor shall allow sufficient time to familiarize himself with the operation of the software.

PART 3 - EXECUTION

3.1 GENERAL

A. The Contractor shall complete all phases of work so the systems can be started, tested, balanced, and acceptance procedures undertaken. This includes the complete installation of all equipment, materials, pipe, insulation, etc., per the contract documents and related directives, clarifications, and change orders.

3.2 PARTICIPATION IN ACCEPTANCE PROCEDURES

A. The Contractor shall provide skilled technicians to startup and debug all systems within the project contracted work. These same technicians shall be made available to assist the Commissioning Authority in completing the commissioning program. Work schedules, time required for testing, etc., shall be requested by the Commissioning Authority and coordinated by the contractor. Contractor shall ensure that the qualified technician(s) are available and present during the agreed upon schedules and of sufficient duration to complete the necessary tests, adjustments, and/or problem resolutions.

B. System performance problems and discrepancies may require additional technician time, Commissioning Authority time, reconstruction of systems, and/or replacement of system components. At no additional cost to The City of New York, the additional technician time shall be made available for subsequent commissioning periods until the required system performance is obtained.

C. The Commissioning Authority reserves the right to question the appropriateness and qualifications of the technicians relative to each item of equipment, system, and/or sub-system. Qualifications of technicians shall include expert knowledge relative to the specific equipment involved and a willingness to work with the Commissioning Authority. Contractor shall provide adequate documentation and tools to start-up and test the equipment, system, and/or sub-system.

3.3 DEFICIENCY RESOLUTION

A. In some systems, inaccurate adjustments, misapplied equipment, and/or deficient performance under varying loads will result in additional work being required to commission the systems. This work shall be completed under the direction of The Commissioner, with input from the Contractor, equipment supplier, and Commissioning Authority. Whereas all members shall have input and the opportunity to discuss, debate, and work out problems, The City of New York and/or Commissioner shall have final jurisdiction over any additional work done to achieve performance.

B. Corrective work shall be completed in a timely fashion to permit the completion of the commissioning process. Experimentation to demonstrate system performance may be permitted. If the Commissioning Authority deems the experimentation work to be ineffective or untimely as it relates to the commissioning process, the Commissioning Authority shall notify The Commissioner, indicating the nature of the problem, expected steps to be taken, and suggested deadline(s) for completion of activities. If the deadline(s) pass without resolution of the problem, The Commissioner reserves the right to obtain supplementary services and/or equipment to resolve the problem. Contractor shall provide supplementary services incurred to solve problems at no additional cost to the City of New York.

3.4 ADDITIONAL COMMISSIONING

A. Additional commissioning activities may be required after system adjustments, replacements, etc., are completed. The contractor(s), suppliers, and Commissioning Authority shall complete this work at no additional cost to the City of New York.

3.5 SUSTAINING SYSTEM READINESS

A. The Commissioning Authority will prepare and issue to the Contractor Pre-Functional Checklist (PFC) forms for each system or major piece of equipment to be commissioned. Pre-Functional Checklists are important to ensure that the equipment and systems are installed and operational. It ensures that Functional Performance and Integrated Systems Testing may proceed without unnecessary delays. Each piece of equipment is to receive full pre-functional checkout by the Contractor. No sampling strategies are to be used. The Pre-Functional Checklists for all equipment related to any given system must be successfully completed prior to formal Functional Performance and Integrated Systems Testing of the system.

B. The Commissioning Authority will monitor and track the completion of the Pre-Functional Checklist forms.

The Contractor shall complete the Pre-Functional Checklists, provided by the Commissioning Authority, as follows:

1. Pre-Functional Checklists should be maintained in a binder(s) or electronically at the Contractor's project site office and are subject to review for comparison between the completion level of the Checklists and the status of the work during site observation visits by the Commissioning Authority.
2. Complete Section 1 "Equipment Delivery" of the Pre-Functional Checklist after equipment delivery to the site.
3. Complete Section 2 "Equipment Installation" of the Pre-Functional Checklist after the equipment installation is complete.

4. Complete Section 3 "Equipment Start-up" of the Pre-Functional Checklist after the equipment has been successfully started. The contractor is to forward copies of all manufacturer's start-up forms and reports to the Commissioning Authority.
   Complete Section 4 "Notification for Testing" of the Pre-Functional Checklist after the equipment if fully operational and ready for Functional Performance and Integrated Systems Testing.
5. Completed and signed Pre-Functional Checklists are a pre-requisite for commencing Functional Performance and Integrated Systems Testing. If field observation indicates a significant deviation from actual installation conditions, all checklists will be returned to the Contractor for revision and resubmission at no additional cost to the City.
6. Only individuals that have direct knowledge and witnessed that a line item task on the Pre-Functional Checklist was actually performed shall initial or check off that item.

C. The Contractor shall clearly list any outstanding items from the Pre-Functional Checklists and/or manufacturer start-up reports and checklists that were not completed successfully in the Comments section of the applicable Pre-Functional Checklist. The Commissioning Authority will review any items/issues listed and will address them through discussion with the Commissioner and Contractor prior to proceeding with Functional Performance and Integrated Systems Testing.

D. The Contractor shall develop detailed start-up plans for all equipment. These plans shall be reviewed by the Commissioner and the Commissioning Authority for completeness and verification that the manufacturer-recommended procedures have been completed.
   1. The Contractor responsible for the installation and start-up of the equipment is responsible for developing the start-up plan by combining the Pre-Functional Checklist with the manufacturer's detailed start-up and checkout procedures and any required quality assurance testing.
   2. The Contractor shall maintain an updated and annotated copy of the start-up plan that shall be accessible for review by the Commissioner and the Commissioning Authority at periodic intervals.
   3. The completed start-up procedures shall be provided along with the completed Pre-Functional Checklists to the Commissioning Authority prior to the Contractor's certification that the systems are ready for Functional Performance and Integrated Systems Testing.

3.6 FUNCTIONAL PERFORMANCE TESTING

A. The CxA will provide to the Contractor functional performance tests (FPTs). The Contractor shall review the test procedures, so that proper preparation may occur. The Contractor shall execute the FPT document and prove to the Commissioner and the Cx Authority that the performance of the Plumbing Systems achieves the performance level identified. Refer to all other specification sections for other systems that may need to be tested. The following systems are to be commissioned:
   1. Domestic Cold-Water House Tank System & Domestic Water Pump
   2. Condensate Recovery System
   3. Associated Controls with Domestic Water Pumps
   4. Associated controls with Condensate Recovery System

B. Detailed testing shall be performed on all installed equipment and systems to ensure that operation and performance conform to contract documents. All tests shall be witnessed by the Commissioning Authority. The following testing is required as part of the commissioning process:
   1. Verification tests are comprised of a full range of checks and tests to determine that all components, equipment, systems, and interfaces between systems operate in accordance with contract documents.

This includes all operating modes, interlocks, control responses, and specific responses to abnormal or emergency conditions.

2. Functional performance tests (FPT) shall determine if the Fire Suppression system is in accordance with the finalized design intent.

3.7 ROLES AND RESPONSIBILITIES

A. Contractor

1. Assure acceptable representation, with the means and authority to prepare and coordinate execution of the plumbing system commissioning program as described in the contract documents.
2. Attend commissioning meetings scheduled by the CxA.
3. Coordinate inclusion of commissioning activities in the construction schedule.
4. Complete Pre-Functional Checklists and manufacturer's pre-startup checklists prior to scheduling pre-testing of the plumbing system.
5. Issue a notice that plumbing pre-testing has been scheduled.
6. Monitor, respond, and remedy deficiencies identified in the Corrective Issue Reports (CIRs) distributed by the CxA in order to expedite corrective actions necessary to achieve design intent.
7. Facilitate resolution of deficiencies that were identified by observations or performance testing.
8. Participate in the Functional Performance Tests as required to achieve design intent.
9. Participate in O&M Instruction as required by DDC General Conditions.
10. Include requirements for submittal data, O&M data, and instruction in each purchase order or sub-contract written.
11. Ensure participation of major equipment manufacturers in appropriate instruction and testing activities.
12. Attend Construction Phase coordination meeting scheduled by the CxA.
13. Assist the Commissioning Authority in all verification and functional performance tests.
14. Prepare preliminary schedule and include the following tasks that will be executed: plumbing system orientation and inspections, O&M manual submission, instruction sessions, pipe testing, flushing and cleaning, equipment start-up, and task completion for use by the Commissioning Authority. Update schedule as appropriate throughout the construction period.
15. Attend initial instruction session.
16. Conduct plumbing system orientation and inspection at the equipment placement completion stage.
17. Update drawings to the record condition to date, and review with the Commissioning Authority.
18. Gather O&M data on all equipment and assemble in binders as required by DDC General Conditions.
19. Notify the Commissioning Authority a minimum of two weeks in advance, so that witnessing equipment and system start-up and testing can begin.
20. Notify the Commissioning Authority a minimum of two weeks in advance, of the time for start of the piping tests including pressure / hydrostatic testing.
21. Participate in and schedule vendors to participate in the instruction sessions.
22. Provide written notification to the Commissioning Authority that the following work has been completed in accordance with the contract documents, and that the equipment, systems, and sub-systems are operating as required.
    a. Plumbing equipment and all contracted equipment.
    b. Piping test reports including pressure / hydrostatic tests.
    c. Provide a complete set of as-built records to the Commissioning Authority.

3.8 STARTUP

A. The Contractor shall follow the start-up and initial checkout procedures listed in this specification and in DDC General Conditions. Division 22 has start-up responsibility and is required to complete systems and sub-systems so that they are fully functional and meet the design objectives of the Contract Documents. The commissioning procedures and functional testing do not relieve, lessen this responsibility, or shift that responsibility partially to the Commissioning Agent or The City of New York.

B. Functional testing is intended to begin upon completion of a system. Functional testing may proceed prior to the completion of systems, or sub-systems at the discretion of the CxA and the Contractor. Beginning system testing before full completion does not relieve the Contractor from fully completing the system, including all Pre-Functional Checklists as soon as possible.

3.9 COMMISSIONING STATUS TRACKING

A. The Contractor shall verify that the Tag designation as well as the number (count) of each unit listed is correct against those contained within the initial Contract Documents.

END OF SECTION 22 08 00

SECTION 22 11 16 – DOMESTIC WATER PIPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum and (5) the Contract [City of New York Standard Construction Contract].

1.2 SUMMARY

A. Section includes:
   1. All work associated with domestic water piping
   2. Extent of hot water supply Work is indicated on the Drawings and by the requirements of this Section.
   3. All parts of the potable water supply, such as valves, water sub-meter, etc. must be certified as "lead free" as defined in the Reduction of Lead in Drinking Water Act of 2011 (not more than a weighted average of .25% lead). Regardless of model numbers indicated herein, provide equivalent models that are "lead free" as defined in the act. All solder and flux used during installation of valves, mixing valves, submeters, etc. associated with the potable water system must also meet the lead-free requirements of the act.

1.3 SUBMITTAL PROCEDURES

A. Refer to the Commissioner General Conditions Section 01 33 00 "Submittal Procedures" for all submittals.

1.4 SUBMITTALS

A. Submit Shop Drawings/Product Literature for the following:
   1. Piping
   2. Thermometers
   3. Vacuum Breakers
   4. Strainers
   5. Pressure Gauges

B. Submit manufacturer's instructions for installation of thermometers.

C. Certifications
   1. Lead-free Certifications: Provide manufacturer's certification that valves, water sub-meter etc. in contact with the potable water meet the requirements of the Reduction of Lead in Drinking Water Act effective Jan 4, 2014.

1.5 QUALITY ASSURANCE

A. Refer to the Commissioner General Conditions Section 01 40 00 “Quality Requirements”.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Piping shall comply with the following:
   1. Type "L" Copper Tubing (Hard Drawn) shall be for use on water distribution piping above ground, excluding short branch supplies to fixtures.
   2. Type "K" Copper Tubing (Hard drawn) shall be for use on water distribution piping underground.

2.2 THERMOMETERS

A. Provide thermometers in locations as indicated on the Drawings to record temperatures of the following:
   1. Building hot water circulating line

B. Thermometers shall be gas actuated dial thermometers having a bulb 6" long with a brass separable socket, 1" NPT filled with a conducting medium. The dial shall be white enameled, black figured, approximately 41/2” in diameter, graduated from 30oF to 240oF. The case shall be cast aluminum, with polished chrome ring.

2.3 VACUUM BREAKERS

A. Atmospheric Vacuum Breakers shall be atmospheric-type vacuum breakers shall conform to ASSE 1001 or CAN/CSA B64.1.1 Vacuum breakers shall be suitable for use on 180°F hot water.

B. Provide from the following manufacturers:
   1. Febco 710A,
   2. Watts 288A
   3. Conbraco 38-100 or
   4. Approved equal.

2.4 PRESSURE GAGES

A. Provide where shown on the Drawings or required, in addition to those called for with specific pieces of equipment, pressure gauges with stainless steel movement, 4½" diameter dials, 0-100 psi dial range, phosphor bronze bourdon tube and black enamel cast aluminum, safety case. Gauge dial shall be micro adjustable. Pressure gauges shall have an accuracy of 1/2 of 1% of the scale range

B. Provide from the following manufacturers:
   1. Weksler Royal gauge Model No. AA14-4.
   2. Weiss Model No. 4UGN.

3. Wilkins.
4. Or approved equal.

C. All gauges shall be equipped with pigtail siphons and shutoff cocks.

D. Siphons and cocks to be of same manufacture as gauges.

E. No permanent gauge shall be used while the Contractor is making hydrostatic tests on any portion of the piping systems.

2.5 WATER GAGES

A. Water gages shall be threaded for 1/2" connection, shall have four guards, 5/8" diameter glass. All fittings in connection with gages shall be finished brass.

B. Provide from the following manufacturers:
1. Weksler Royal gauge.
2. Weiss.
3. Wilkins.
4. Or approved equal.

PART 3 - EXECUTION

3.1 EXECUTION REQUIREMENTS

A. Refer to the Commissioner General Conditions for the requirements governing execution.

3.2 HOT WATER PIPING

A. Connect to the hot water heater and extend, suspended from the cellar or basement ceiling, brass pipe or type "L" copper tubing hot water mains of the sizes indicated on the Drawings and extend from same the required number of branches and risers to supply all fixtures, apparatus, etc. All mains, risers and branches to fixtures shall have water hammer arresters where indicated on the Drawings and where required.

B. Install gate valves, unions and 1/2" drain bibbs on all branches from mains to risers.

C. Branches connected to the hot water and circulation risers shall be connected to the risers in such a manner that the risers supported at their base are free to expand upward for their entire length.

D. From a point on the ceiling below the branch to the highest fixture on each riser, extend circulating pipes to the return main, which shall be extended and connected to the piping at water heater as indicated on the Drawings. At the base of the hot and circulation pipes and before they connect to return main, install gate valves, unions and 1/2" drain bibbs.

E. Install check valves and balancing valves at the base of circulating line. Adjust balancing valves and regulate same so that a good circulation of hot water is obtained. Hot water system shall provide adequate hot water at the designated temperature to all plumbing fixtures that require hot water. Hot water system to be balanced at maximum velocity between 4 to 5 ft/sec.

3.3 COLD WATER DISTRIBUTION PIPIN

A. The distributing mains shall be suspended from the overhead structural floor slab or steel beam and shall be of the sizes and arrangements indicated on the Drawings. The branches to fixtures in the cellar and basement shall be connected to the distributing mains and all shall be of the sizes indicated on the Drawings. Each branch shall be installed with a gate valve.

B. Install gate valves, unions and 1/2" drain bibbs on all branches from main to risers; see Drawings. Branches connected to risers shall be connected in such a manner that the riser is free to expand upward for its entire length.
   1. Water hammer arresters shall be installed on all mains, risers and branches to fixtures where indicated on the Drawings and when required.
   2. Ball valves may be substituted for gate valves on distribution branches and risers for pipe sizes up to and including 2".

C. The headers supplying flushometers to water closets shall be run in pipe spaces or as indicated on the Drawings and shall be 1½" for two (2) water closets, 2" for three (3) or four (4) water closets and 2½" for five (5) to ten (10) water closets with 1¼" branch for each water closet flushometer and 3/4" for urinal flushometer (1¼" for barrier-free urinal). Each flush header branch from riser shall be provided with a gate valve. The header shall be extended with a shock absorber where indicated on the Drawings and when required.

3.4 THERMOMETERS

A. Thermometers shall be installed in accordance with the manufacturer's instructions. Location of thermometers shall be as indicated on the Drawings or as directed by the Commissioner.

3.5 PIPING SYSTEM TESTS - GENERAL

A. All new piping and equipment shall be tested prior to application of insulation, painting, concealing or placing of backfill. Testing as stipulated herein shall be considered minimum.

B. The work of the Contractor shall include the furnishing of all labor, testing instruments, gauges, pumps, smoke machines, and other equipment required or necessary for tests.

C. All appurtenances shall be operated after installation to determine whether or not they meet the requirements of the Specifications.

D. Where controls and accessories are not designed to withstand pipe test pressures, they shall be removed or otherwise properly protected against damage during such test. After approval of such tests, controls and accessories shall be installed and tested with operating medium to operating pressures.

E. If leaks are observed during any tests the defective work or material shall be replaced. No caulking of screwed joints or holes will be acceptable. Peening of welds is prohibited. Repetition of the entire test will be required as many times as leaks can be observed from the tests, until no leak results in successful completion of the test.

F. All tests shall be made in the presence and to the satisfaction of the Commissioner, over the work to be tested, and as may be directed; and at least 72 hours notice shall be given to all parties in advance of all tests.

G. All piping which is to be enclosed in partitions or hung ceilings shall be tested and made tight when directed by Commissioner and in adequate time to permit the installation of partitions and ceilings. When necessary, the Contractor shall drain the piping and/or take such precautions as required to prevent damage by freezing.

3.6 TESTING OF AUTOMATIC CONTROLS

A. In cooperation with control manufacturer's representative, adjust controls to operate as specified. Testing personnel shall check all controls for proper calibrations and list all controls requiring adjustment by control installers.

3.7 DOMESTIC WATER SYSTEM DISINFECTION

A. The potable water system shall be disinfected and water samples shall be collected and analyzed by the Contractor. The requirements of this Section include disinfection of all parts of new, repaired or replaced potable water systems including, new service connections as specified.

B. All work shall be performed in accordance with the applicable requirements of §141.11 of the New York City Health Code, and Section PC 610 of the 2014 New York City Plumbing Code. “Potable water” as used in this Section shall have the meaning defined in Article 141 of the New York City Health Code, as set forth in Title 24 of the Rules of the City of New York. As used in this Section, the potable water system includes, but is not limited to, the hot and cold water distribution system piping, fittings, fixtures, and related appurtenances, and service main connections.

C. Chemicals, additives, treatment devices, and equipment that may come in contact with potable water shall be in compliance with the requirements of Section PC 610, the American Water Works Association (AWWA), National Sanitation Foundation International (NSF)/ American National Standards Institute (ANSI) 60 Drinking Water Treatment Chemicals – Health Effects and NSF/ANSI 61 Drinking Water System Components – Health Effects.

D. The health and safety of the Contractor’s employees and subcontractors is the sole responsibility of the Contractor during performance of the Work. All work must be completed in accordance with applicable Federal, State, Local agency Health and Safety requirements and regulations.

E. The Contractor (specifically the individual responsible for preparing the DWQTP(s)) shall visit the site to inspect all parts of the potable water system to be disinfected and to determine site-specific conditions to be addressed prior to submittal of the DWQTP(s).

F. The Contractor shall prepare a site specific DWQTP for review that complies with the "Drinking Water Quality and Testing Plan" and the following requirements, as applicable:
   1. Description of pre-disinfection flushing procedures using Flushing Logs as per Template: Flushing shall be performed in the presence of the Commissioner using clean potable water to ensure a turnover of at least four complete water volumes of the water contained in the entire new piping system or one hour flushing; whichever is greater, and tested for residual chlorine concentration equal to 0.2 parts per million (ppm) or municipally-supplied water background chlorine levels.
   2. Pre-disinfection flushing shall be performed at a flow rate sufficient to remove all debris or sediment from new potable water piping and components and using methods to prevent retainage of debris or sediment by components such as aerators, strainers, vacuum breakers, filters, valves, etc.
   3. Sodium hypochlorite or approved equal shall be used for disinfection (chlorine gas is not acceptable and shall not be used).
   4. Description of testing procedures to verify pH is within acceptable range during disinfection procedures. The DWQTP shall include a statement that pH range will not result in damage to the potable water system and provides for optimal disinfection conditions.
   5. Point(s) of treatment for the potable water distribution system: The concentration range appropriate to achieve disinfection is equal to or greater than 50 ppm for a contact time of 24 hours, or equal to or greater than 200 ppm for a contact time of 3 hours. All potable water fixtures shall be tested (using field test strips or portable chlorine meter) to verify that chlorinated water is present throughout the system.
   6. Contact time: The Contractor shall identify points of chlorine testing throughout the potable water system, which will be used to ascertain that there is sufficient concentration of chlorine remaining throughout the water system to ensure disinfection after the appropriate contact time has been reached (chlorine concentration shall be checked at the beginning of the hold time and once every hour thereafter). The contact times specified in Section PC 610 are the minimum required contact times. The Contractor shall place signs on each fixture/faucet indicating "Disinfection in Progress. Do Not Drink or Use Water."
   7. Steps to achieve disinfection should the chlorine concentration remaining in the potable water system at the end of the contact time be below the acceptable level.
   8. Sampling points and number of samples for bacteriological examination. Samples shall be collected from a minimum of one fixture per area of work being performed when there is more than one work area/floor. Otherwise a minimum 10% of potable water fixtures per floor or two fixtures per floor, whichever is greater, shall be sampled. Samples shall be collected a minimum of 24 hours after completion of post-disinfection flushing.
   9. Bacteriological analyses to be performed and applicable regulatory standards: Analysis of water samples for Total Coliform, E. Coli bacteria, and Heterotrophic Plate Count (HPC) or standard plate count (SPC) is required.
   10. Name and qualifications of specialty Contractor performing the disinfection, sampling and testing. Minimum contractor qualifications are: successful completion of at least three projects similar in scope and execution and at least three years experience in performing water disinfection and sampling.
   11. Name of certified laboratory(ies) performing the disinfection testing (with copies of current certifications provided).
   12. Report to be in standard laboratory reporting format.
   13. Water Supply Service Connection Disinfection Procedure utilizing template DWQTP template and Paragraphs 3.03 I & J.

14. Statement that the potable water system has been carefully evaluated, that the proposed disinfectant and disinfection procedures are compatible with all components of the potable water system, and that the disinfection will in no way result in damage to the potable water system.
15. Explicitly identify each and every component, if any, of the building potable water system which the Contractor would propose to exclude from the disinfection procedures. Describe how each component would be excluded. Provide a justification for any such proposed exclusion, including citations to supporting regulations and/or guidance. There shall be no such exclusions without the express written approval by the Commissioner.
16. As part of the DWQTP, the Contractor shall submit a copy of the piping plumbing drawings including the location of the service connection(s) relative to the water main. Contractor shall indicate isolation valves, injection points, and sampling locations on the plumbing drawings.

G. All disinfection, flushing, sampling and testing shall only be performed under the direct, on-site supervision of the Commissioner.

H. The Contractor shall ensure that all pipes, fittings, fixtures, and related appurtenances are all shipped, handled, delivered and stored in an acceptable, sanitary manner. Disinfection of interior parts of the potable water system shall not begin until all fixtures, piping, and drains are installed and functioning properly.

I. Valves and Fittings to Facilitate Disinfection
1. All new potable water plumbing subject to disinfection shall be isolated from the existing potable water system in the building until acceptable results from bacteriological analysis are received and accepted by the Commissioner. The Contractor shall install new valves at each transition point between new and existing piping to ensure isolation of the newly-installed piping from the existing potable water system. The Contractor shall install fittings, as required, for injection and discharge of disinfectant from the newly-installed potable water plumbing. Injection and discharge points shall be installed as closely as possible to adjacent isolation valves. If any auxiliary devices are required to perform disinfection (e.g., a hose), they shall be delivered to the new and within intact factory-wrapped packaging.
2. Following disinfectant injection and after post-disinfection flushing, the Contractor shall measure chlorine levels from outlets immediately outside of the isolation valves to confirm no chlorine has entered the existing system from the work area.
3. All temporary fittings associated with injection and discharge (as applicable) shall be removed and a plug installed in accordance with all applicable regulations after successful completion of the disinfection and water quality sampling

J. All chain of custody forms and sample analysis results shall be submitted to the Commissioner within 72 hours of the time that samples are delivered to the laboratory. All disinfection procedures and bacteriological results shall be reviewed and a determination made by the Commissioner as to the suitability of the water for drinking purposes. This determination will be made upon verification that results are "negative/absent" for E. Coli and Total Coliform and are less than 500 Colony forming units/milliliter (CFU/mL) or most probable number/milliliter (MPN/mL) for HPC or SPC and that all work has been conducted in full compliance with the requirements of this Section.

K. Assist and coordinate lead testing in accordance with Article 3.20 of this Section.

3.8 PUMP TESTS

A. All pumps shall be tested by the manufacturers prior to shipment of the pump. The test shall show the characteristic curves, indicating the relations of capacity, head, efficiency and H.P. throughout the pump's entire range. For each pump three certified copies of the tests shall be delivered to the Commissioner before the pumps are set in position.

3.9 MATERIALS

A. Provide all materials, equipment and other items required for tests, retests, repairs and replacements that are required to complete the Work of this Section.

B. All gauges, instruments and test devices shall be provided with a certificate of calibration and calibration curve or letter indicating that a minimum of five (5) test points have been calibrated. The certificate and letter must show the date of last calibration. The calibration date must be within a year of the testing date.

C. If necessary, provide new (factory wrapped) hose for use during disinfection procedures.

D. The Contractor shall furnish all fuel, apparatus, material and labor required for preliminary and final operations, cleaning, testing and adjusting, including the necessary oil, electric current and the services of competent mechanics.

3.10 INSPECTION

A. The Commissioner reserves the right to direct the Contractor to disassemble or take apart any or all material and equipment called for in order that it may be inspected to see that it has been constructed in strict accordance with the plans, specifications and details. If after inspection, it is found to fully comply, then the Contractor shall properly reassemble all such material and equipment.

B. Any material or equipment that does not fully comply with the requirements of the plans, details and specifications will be rejected and shall be at once removed from the premises and shall be replaced with new material and equipment that complies fully with the requirements of the plans, details and specifications.

END OF SECTION 22 11 16

SECTION 22 11 23 – DOMESTIC WATER PUMPS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum and (5) the Contract [City of New York Standard Construction Contract].

1.2 SUMMARY:

A. Provide all electrical motor-driven pumps, compressed air and vacuum systems, appurtenances and tanks as indicated on the Drawings and as specified herein.

1.3 SUBMITTAL PROCEDURES

A. Refer to DDC General Conditions Section 01 33 00 “Submittal Procedures” for all submittals.

B. Submit Manufacturer's installation and operation instructions, catalog sheets, specifications, and maintenance manuals for each item specified.

C. Submit Shop Drawings.
   1. Cuts of each pump, indicating parts and materials.
   2. Motor data.
   3. Cuts of each control panel and components.
   4. Wiring Diagrams.
   5. Cuts of each float switch assembly.
   6. Cuts of each water pressure booster system.

D. Submit a compliance affidavit, if all items in subparagraph B match contract documents.

E. Certificates:
   1. Approved Agency Certification listed and/or label for tank lining.
   2. Certified pump test curves.
   3. Manufacturer’s data report for tank pressure testing.

F. Maintenance data:
   1. Spare parts
   2. Maintenance manual

1.4 QUALITY ASSURANCE

A. Refer to DDC General Conditions Section 01 40 00 “Quality Requirements”.

B. Each pump control panel must have UL label and panel wiring shall comply with the latest New York City Electrical Code.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Pumps- General
   1. The casing for pumps shall be of close-grained cast iron for bronze fitted pumps or bronze on all bronze pumps. The waterways must have large cross-section areas with smooth turns so that the water will pass through at a low velocity without shock. Suitable openings shall be provided for the suction gauge, discharge gauge, air vent and cock. Openings shall be tapped and plugged.
   2. Unless otherwise specified, the shaft shall be of the best grade of 18-8 stainless steel and of ample size to transmit safely the maximum amount of power required. Shaft shall be provided with ample keyway and key to accurately hold the impeller in place. The impeller shall be secured to the shaft using a nut and locking washer. The impeller shall be hydraulically balanced for all pressures and shall be of bronze, hand finished on the inside, machine turned and polished on the outside, dynamically balanced at all speeds, and with liberal keyway to fasten to shaft. Coupling shall be flanged and of the flexible type with pin and rubber bushing construction. That portion of the shaft passing through the pump casing and stuffing boxes shall be encased in a bronze sleeve, securely fastened to the shaft.
   3. A name-plate showing the serial number, discharge GPM and Head of each pump shall be attached to the respective pump. The necessary wiring and controlling devices will be furnished and installed complete under the Electrical Division, unless otherwise specified.
   4. Certified test curves of the pumps to be installed shall be provided for all pumps.
   5. Flexible Hose Connections
      a. Where indicated on Drawings or specified, connect the pumps to piping with flexible hose. Corrugated inner tube and outer shield of wire braid: Stainless steel or Bronze with carbon steel or copper end connections. The flexible hose shall have minimum of 24" live length and design for 150 psi. working pressure.
      b. Provide from the following manufacturers:
         1) Chicago Metal Hose Co.,
         2) Tite Flex Metal Hose Co.,
         3) Anaconda Metal Hose Co.
         4) Flex-Hose Co., Inc.
         5) Or approved equal

B. Roof Tank Pumping System
   1. Provide where shown on plans, a factory-assembled duplex roof tank pump system. Refer to drawings for pump schedule. The system shall include close-coupled, bronzed-fitted, end-suction centrifugal pumps. The two main pumps shall be as shown in the pump schedule on the Drawing. The pumps are to be of the back pull-out design, with center-line discharge, bronze shaft sleeve, enclosed bronze

impeller and mechanical shaft seal. Each pump shall be driven by a 3-phase, 60-cycle, 208-volt squirrel cage, ball bearing, drip proof electric motor of size indicated on the Drawings or as specified herein.

2. The system shall include a control valve for each pump which will act as a pressure reducing valve and a check valve. The system shall include a control panel in a NEMA-4, watertight enclosure factory mounted and wired on the unit, comprising a fusible disconnect switch for each motor with thru-door operating handles, lead-lag automatic transfer switch, a magnetic starter for each motor, HOA selector switches, pilot lights, required transformers, holding circuits and time delays, a lag pump control pressure switch and a terminal strip.
3. The system shall be factory assembled on a structural base and shall include copper suction and discharge headers, pressure gauge for each header, an isolation valve on the suction and discharge of each pump and a temperature sensing purge valve.
4. Provide a low static suction pressure cut-out switch installed on the house side of each building control valve and the street side of each meter assembly with panel-front indicating light and required circuitry to stop pumps if suction pressure drops more than 7 psi below the normal static pressure at the point of entry of the water service. Confirm with the Department of Environmental Protection (DEP) for set point of low suction pressure cut-out switch.
5. Pumps shall be connected to suction and discharge piping with flexible hoses
6. System fabricators shall be one of the following
   a. Federal Pump Co. Type SP (Duplex).
   b. Canariis Corp.
   c. Syncroflo, Inc.
   d. Liqui-Trol Systems, Inc./Ketcham Pump Co.
   e. Paco Pumps.
   f. Grundfos Pumps Corporation U.S.A.
   g. TIGERFLOW Systems, Inc.
   h. Armstrong Pumps Inc.
   i. Or approved equal.

PART 3 - EXECUTION

3.1 EXECUTION REQUIREMENTS

A. Refer to DDC General Conditions for the requirements governing execution.

B. Pumps
   1. Install all pumping apparatus as detailed on the Drawings, or as specified herein, or as recommended by the respective Manufacturer, to be completely operable for its intended use.
   2. The Contractor shall have the pump supplier verify the depth of each sump pit so that proper length of shaft shall be supplied.
   3. The use of grooved type fittings is acceptable in lieu of threaded or flanged fittings on sump pump discharge where only clear water will be discharged.

3.2 PUMP TESTS

A. All pumps shall be tested by the manufacturers prior to shipment of the pump. The test shall show the characteristic curves, indicating the relations of capacity, head, efficiency and H.P. throughout the pump's entire range. For each pump three certified copies of the tests shall be delivered to the Commissioner, before the pumps are set in position.

3.3 DEMONSTRATION

A. The service of a factory instructed representative shall be made available on the job site for start-up and for instructing the building manager and staff in the operation and maintenance of each system installation. A minimum of two visits is required.

END OF SECTION 22 11 23

SECTION 23 05 00 - COMMON WORK RESULTS FOR HVAC

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum and (5) the Contract [City of New York Standard Construction Contract].

1.2 SUMMARY

A. Refer to DDC General Conditions

1.3 SUBMITTAL PROCEDURES

A. Refer to DDC General Conditions Section 01 33 00 “Submittal Procedures” for all submittals.

B. General: Unless indicated otherwise in the specific technical section, if a particular product specified in the technical section is being provided, manufacturer’s qualifications and samples (except as listed below), are not required to be submitted. Manufacturer’s product data, installation instructions, samples requiring color or texture approval, samples showing thickness and type of material, shop drawings, and calculations are to be submitted. Schedules, startup manuals, operation and maintenance manuals, and shop drawings are always required to be submitted.

C. The following Submittals are required for all Sections of Division 23-Heating, Ventilating, and Air Conditioning.
   1. Product Data: Submit manufacturer's product data for equipment including catalog sheets or cuts, specifications, capacity, performance charts, test data, materials, dimensions, weights, furnished specialties and accessories; and installation instructions. Submit start-up instructions where applicable.
   2. Shop Drawings: Submit manufacturer's shop drawings detailing equipment assemblies and indicating dimensions, weight, loadings, required clearances, method of field assembly, components, location and size of each field connection.

D. Where indicated in the Supplemental Submittals of the technical sections, the following submittals are defined as follows:
   1. Maintenance Data: Submit maintenance data and parts list. Include this data and the product data in the maintenance manual in accordance with the requirements.
   2. Test Report: Submit factory certified test results prior to shipping.
   3. Certificates: Submit written affidavit stating that the Contractor has started up and demonstrated (in the presence of the Commissioner) that the equipment is operating properly as designed.

E. Piping, Ductwork, and Wiring Diagrams: Submit a complete wiring diagram, ductwork layout, and piping layout of all equipment. All parts of the installation shall be indicated exactly as installed and shall be

properly identified. Valve identification numbers shall agree with valve tags of HVAC Identification and all piping shall be clearly shown and labeled.

F. Coordination Drawings: Provide complete coordination Drawings showing interface of all mechanical trades with the Architecture of the Building. All copies are to be signed. The Contractor is to keep a copy of the signed coordination drawing on the site.

G. Miscellaneous Submittals
   1. HVAC Painting Schedule: Provide a complete schedule of all items to be painted.

1.4 QUALITY ASSURANCE

A. Refer to DDC General Conditions Section 01 40 00 "Quality Requirements".

B. Manufacturer's Qualifications: If a particular product specified in the technical section is not being provided, provide manufacturer's qualifications.

C. Provide manufacturer's qualifications that indicate that the firms are regularly engaged in manufacture of equipment, of types, materials, and sizes required, whose products have been in satisfactory use in similar service for not less than three years.

D. All appliances regulated by the New York City Construction Codes shall be listed and labeled (reference Sections MC 301.4 & MC 301.6 of the 2014 NYC Mechanical Code). Testing of material shall be in accordance with §28 113 of the NYC Administrative Code (reference Section MC 301.5). Whenever the NYC Construction Codes or the Rules of the Department of Buildings requires that material be listed or labeled and material proposed to be used is not so listed or labeled, the use of such material shall be subject to prior approval by the Commissioner and such material shall be used only to the extent set forth in such approval.

1.5 ACCESSIBILITY

1. Install access for servicing and maintenance and install equipment such that they can be accessed for servicing and maintenance. Coordinate the final location of concealed equipment and devices requiring access with final location of access panels and doors. Allow ample space for removal of all parts that require replacement or servicing.
2. For access doors to valves, dampers and all other HVAC type of items, accessories and equipment, concealed in walls, furrings and hung ceilings. Door shall permit full access to the equipment.
3. All appliances shall be accessible for inspection, service, repair and replacement without disabling the function of a fire-resistance-rated assembly or removing permanent construction, other appliances, venting systems or any other piping or ducts not connected to the appliance being inspected, serviced, repaired or replaced. A level working space at least 30" deep and 30" wide shall be provided in front of the control side to service an appliance. Clearance shall also be provided as required by the New York City Electrical Code.
4. All clearances shall be maintained around heaters, tanks and related equipment and appliances so as to permit inspection, servicing, repair, replacement and visibility of all gauges.

1.6 ROUGHING-IN

A. Verify final locations for roughing work with field measurements and with the requirements of the actual equipment being connected. Coordinate with General Construction drawings.

1.7 MECHANICAL INSTALLATIONS

A. Coordinate HVAC equipment and materials installation with other building components.

B. Verify all dimensions by field measurements.

C. Arrange for chases, slots, and openings in other building components to allow for HVAC installations.

D. Coordinate the installation of required supporting devices and size of sleeves to be set in poured concrete and other structural components as they are constructed.

E. Sequence, coordinate, and integrate installations of HVAC materials and equipment for efficient flow of the Work. Give particular attention to large equipment requiring positioning and entrance prior to the close of the building.

F. Coordinate the cutting and patching of building components to accommodate the installation of HVAC equipment and materials.

G. Where mounting heights are not detailed or dimensioned, install HVAC services and overhead equipment to provide the maximum headroom possible.

H. Install HVAC equipment to facilitate maintenance and repair or replacement of equipment components. As much as practical, connect equipment for ease of disconnecting and minimum of interference with other installations.

I. Coordinate the installation of HVAC materials and equipment above ceilings with suspension system, light fixtures, and all other installations and accessories.

J. Provide all rigging, disassembly and reassembly of equipment including the furnishing and installation of dunnage and all other required and necessary accessories. Supports for ductwork/pipes/etc. supported by the roof deck shall utilize manufactured supports or pipes that will permit effective roofing. Use of irregular shaped units such as strut channels is not permitted.

K. For purposes of clearness and legibility, HVAC Drawings are essentially diagrammatic and size and location of equipment are drawn to scale wherever possible. The Drawings indicate size, connection points and routes of pipe. It is not intended, however, that all offsets, rises and drops are shown. Provide piping as required to fit structure, avoid obstruction, and retain clearances, headroom openings and passageways. Piping/ductwork installed over any means of egress and access passageways must be 7’-6” clear inclusive of insulation.

L. Piping at equipment must be done in a manner such that access around equipment is not impeded, such as at equipment platforms.

1.8 PRE-INSTALLATION CONFERENCE

A. Before the HVAC Work is scheduled to commence, a conference will be called by the Commissioner at the site for the purpose of reviewing the Drawings and the Specifications and discussing requirements for the Work. The conference shall include, at a minimum, the Contractor and the HVAC Subcontractor. Subcontractors/installers of other trades may also be required to attend to discuss coordination with their work. The Contractor shall send a conference agenda to all attendees prior to the scheduled date of the conference.

B. The HVAC Subcontractor shall attend pre-installation conferences of other trades for coordination of the work.

1.9 COORDINATION DRAWINGS

A. Provide coordination drawings. Coordination drawings shall be completed per Schedule so as not to delay the progress of the Project, for example, the installation of any floor slab in which the placing of mechanical equipment (sleeves, inserts, conduits, and all other accessory items) is involved. The HVAC Subcontractor shall cooperate with the P&D, Fire Protection Systems, and Electrical Subcontractors in the development of the coordination drawings. Drawings shall be submitted prior to installation of the MEP systems.

B. If any trade installs any Work before coordinating with the Work of other trades, that Trade shall make necessary changes to correct the condition without extra cost to the City of New York. This requirement for "Coordination Drawings" shall not be construed as authorization to make any unauthorized changes to the Drawings. All Design Drawings space allocations shall be maintained, such as ceiling height, chase walls, equipment room size, and all other items and accessories, unless prior written authorization is received from the Commissioner to change them.

C. After the set of CAD (or Revit) drawings have been coordinated, and all necessary changes have been made, each Subcontractor shall sign the coordination drawings, attesting to the agreement that the work is clear.

D. Furnish (in writing, with copies to the Commissioner) any information necessary to permit the Work to be installed satisfactorily and with the least possible interference or delay.

1.10 CUTTING AND PATCHING

A. Do not endanger or damage installed Work through procedures and processes of cutting and patching.

B. Arrange for repairs required to restore the work, because of damage caused as a result of HVAC installations.

C. No additional compensation will be authorized for cutting and patching Work that is necessitated by defective or non-conforming installations.

D. Perform cutting, fitting, and patching of HVAC equipment and materials required to:
   1. Remove and replace defective work.
   2. Remove and replace work not conforming to requirements of the Contract Documents.
   3. Remove samples of installed work as specified for testing.

4. Install equipment and materials in existing structures.
5. Cut, remove and legally dispose of selected HVAC equipment, components, and materials as indicated, including, but not limited to removal of HVAC piping, heating units and trim and other HVAC items made obsolete by the new work.
6. Protect the structure, furnishings, finishes, and adjacent materials not indicated or scheduled to be removed.

E. Locate identify and protect HVAC services passing through remodeling or demolition area and serving other areas required to be maintained operational. When transit services must be interrupted, provide temporary services for the affected areas.

1.11 MATERIALS

A. Since manufacturing methods vary, reasonable minor variations are expected; however, performance and material requirements shall be of the minimum standards acceptable.

1.12 EQUIPMENT NOISE AND VIBRATION

A. Provide equipment and systems that, as defined herein, shall be quiet and free of apparent vibration in operation.

B. The vibration shall not be apparent in occupied areas of the building. Both the balancing of rotating machinery and the installation of vibration isolation at various locations are required.

C. Obtain equipment that is quiet in operation as compared to other available equipment of its size, capacity, and type; install equipment so that a minimum amount of noise and/or vibration is transmitted to the building; and fabricate the duct system so that air noises generated in the system are held to an absolute minimum.

D. Precautions deemed necessary to provide a quiet installation shall be done as part of the Work of this Project. After the system is in operation, make changes to equipment or Work installed so that the noise criteria defined in the New York City Construction Code (including Mechanical Code MC 928), New York City DEP Noise Code Sections 24-218, 24-227, 24-228 and 24-232 and the following are adhered to:

LOCATION EQUIVALENT	A-WEIGHTED SOUND LEVEL (dBA)	APPROXIMATE NOISE CRITERION (NC)
General Circulation/Lobby Areas	50	45
General Office (Open-Plan Areas)	45	40
Toilets	55	50
Storage/Work Rooms	55	50

E. Adjust all the equipment RPM, noise production and vibration in order to avoid any production of resonance in any system.

F. Noise producing mechanical equipment located within 100 feet of habitable room windows shall be tested at the equipment for compliance with the design STC rating of the equipment.

1.13 EQUIPMENT GUARDS

A. Provide easily removable expanded metal guards for all belts, couplings, exposed fan inlets and outlets, and other moving parts of machinery. Provide tachometer openings in the guards at least 2" in diameter, for all belt-driven or variable speed machinery. Equipment guards shall comply with OSHA requirements.

1.14 DELIVERY, STORAGE, AND HANDLING

A. Handle equipment carefully to prevent damage, breaking, denting, and scoring. Do not install damaged units or components; replace with new.

B. Store equipment in clean dry place. Protect from weather, dirt, fumes, water, construction debris, and physical damage.

C. Comply with manufacturer's rigging and installation instructions for unloading equipment, and moving them to final location.

1.15 RECORD DOCUMENTS

A. Refer to DDC General Conditions.

B. Mark Drawings to indicate revisions and date of revisions.

1.16 GUARANTEES, WARRANTIES

A. Refer to DDC General Conditions. Refer to individual equipment specifications for warranty requirements.
   1. Compile and assemble the warranties specified for HVAC work into a separated set of documents, tabulated and indexed for easy reference.
   2. Provide complete warranty information for each item to include product or equipment including duration of warranty; and names, addresses, and telephone numbers and procedures for filing a claim and obtaining warranty services.
   3. Manufacturers', not Contractors' warranties, shall be provided for all HVAC equipment and accessories.
   4. All warranties are to start from the date of Substantial Completion.

1.17 OPERATIONS, INSTRUCTION, AND MANUAL

A. Refer to DDC General Conditions for procedures and requirements for preparation and submittal of operation and maintenance manuals of each HVAC equipment. Refer to individual equipment specifications for maintenance manual additional requirements. In addition, include the following information:

1. Description of function, normal operating characteristics and limitations, performance curves, engineering data and tests, and complete nomenclature and commercial numbers of all replaceable parts.
2. Manufacturer's printed operating procedures to include start-up, break-in, routine and normal operating instructions; regulation, control, stopping, shut-down, and emergency instructions; and summer and winter operating instructions.
3. Maintenance procedures for routine preventative maintenance and troubleshooting; disassembly, repair, and reassemble; aligning and adjusting instructions.
4. Servicing instructions and lubrication charts and schedules.

B. Bind all the other Sections maintenance manuals in a single final Operating and Maintenance Manual with the requirements of DDC General Conditions for contract requirements.

C. Refer to DDC General Conditions for contract requirements for procedures and requirements for instruction on each HVAC equipment. Refer to individual equipment specifications for the additional instruction requirements.

1.18 PAINTING

A. Paints and coatings used in the interior of buildings shall be in compliance with Part 205, "Architectural Surface Coatings", Department of Environmental Conservation, State of New York, governing the emission of Volatile Organic Compounds and meet the applicable VOC limits of the Suggested Control Measures for Architectural Coatings, or the South Coast Air Quality Management District (SCAQMD) Rule 113, effective June 3, 2011. Exterior paints and coatings shall comply with SCAQMD Rule #1168 of July 1, 2005. Architectural coating shall also comply with New York City EPP Minimum Standards for Construction Products chapter 2.

B. All adhesives and sealants shall comply with the South Coast Air Quality Management District (SCAQMD) Rule #1168; VOC limits shall comply with the limits indicated in The New York City Environmentally Preferable Purchasing (EPP) Minimum Standards for Goods. Those limits correspond to an effective date of the SCAQMD Rule #1168 of July 1, 2005.

C. Painting for materials and method of application and follow all the requirements specified in the Section and herein below.
1. Primer Paint - Steel: Low VOC waterborne epoxy.
2. Primer Paint - Galvanized ductwork: Where final color is safety yellow, tint primer yellow. Acrylic primer.
3. Primer Paint - Ferrous metal over 290°F: Inert multi-polymeric matrix capable of withstanding elevated temperatures and sever thermal cycling (-300 to 1200°F).
4. Finish Paint - Interior Application: Low VOC semi-gloss acrylic polymer.
5. Finish Paint - Exterior Application: Low VOC semi-gloss polyurethane.

D. Painting Schedule
1. Paint the following work where exposed in equipment rooms or in occupied spaces:
   a. Equipment.
   b. Uninsulated metal piping.
   c. Uninsulated plastic piping.

d. Pipe hangers and supports.
e. Metal conduit.
f. Plastic conduit.
g. Tanks that do not have factory-applied final finishes.
h. Duct, equipment, and pipe insulation having cotton or canvas insulation covering or other paintable jacket material.

2. Finish painting of mechanical and electrical equipment is not required when located in interstitial spaces, above suspended ceilings, in concealed areas such as pipe and electric closets, pipe tunnels, trenches, attics, roof spaces, shafts and furred spaces. Finish painting is not required for copper materials, stainless steel or aluminum ductwork, stainless steel vent piping, or piping with stainless steel or aluminum jacket.
3. Paint Systems
   a. Steel Substrates: One coat of steel primer paint and 2 coats of finish.
   b. Galvanized Metal Steel Substrates: One coat of galvanized steel primer paint and 2 coats of finish.
   c. Insulation Covering Substrates: Once coat of low VOC latex primer and 2 coats of finish
   d. Ferrous Metal over 290°F for non-factory painted boilers and engine exhaust pipes: two coats of high-temperature primer.

E. Color Coding
1. All color schemes, minimum length of marker color field and minimum letter height shall be in accordance with ANSI/ASME Standard A13.1-2015, "Scheme for the Identification of Piping Systems".
2. Equipment: Gray, except for:
   a. Non-factory painted boilers, fuel oil burning equipment and steam generation equipment including hangers, supports, valves, traps and miscellaneous iron work in contact with pipe - paint in aluminum color.
   b. Insulation coverings on breechings inside boiler room and condensate tanks - paint in white.
2. Piping Colors (all legends to use white lettering unless otherwise noted).

PIPE	PIPE COLOR	LEGEND
Drain Line	Orange with Black Text	Drain
Low Pressure Steam	Orange with Black Text	L.P. Stm
Low Pressure Condensate Return	Orange with Black Text	L.P. Ret
High Pressure Steam	Orange with Black Text	H.P. Stm
High Pressure Condensate Return	Orange with Black Text	H.P. Ret
Hot Water Heating Supply	Orange with Black Text	H.W. Htg Sup
Hot Water Heating Return	Orange with Black Text	H.W. Htg Ret
Gravity Condensate Return	Green	Gravity Cond Ret
Pumped Condensate Return	Green	Pumped Cond Ret
Vacuum Condensate Return	Green	Vac Cond Ret
Chemical Feed	Orange with Black Text	Chem Fed
Pumped Condensate	Green	Pump Cond
Pumped Recirculating	Green	Pump-Recirc.
Vent Line	Green	Vent

1.19 ADJUSTING AND CLEANING

A. Refer to DDC General Conditions for contract requirements for general requirements for final cleaning.

B. Alignment: Check alignment, and where necessary, realign equipment within recommended tolerances by the manufacturer and in presence of manufacturer's service representative and the Commissioner.

1.20 TORCH BURNING OPERATION

A. The storing and use of oxygen and combustible gases in conjunction with torch burning apparatus is subject to the Division of Fire Prevention of the Fire Department of the City of New York, latest Fire Prevention (F.P.) Directive. Fire watches shall be provided during all operations using torches for burning, cutting or welding.

B. Contractor shall apply for and obtain permits for the use and storage of such equipment on building premises. The operator of such equipment shall have a certificate of fitness issued by the New York City Fire Department.

C. The cost of permits, certificates, fire watches, apparatus and other items required in the torch burning operation shall be borne by the Contractor at no additional cost to the City of New York.

1.21 BUILDING MANAGEMENT SYSTEM COORDINATION

A. Coordinate with Contractor as to actual scope to be included in the HVAC and Temperature Control Work and delineation with the Electrical Subcontractor’s work.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

3.1 EXECUTION REQUIREMENTS

A. Refer to DDC General Conditions for the requirements governing execution.

3.2 INSPECTION

A. Examine areas and conditions under which equipment is to be installed. Do not proceed with work until conditions are suitable.

3.3 INSTALLATION

A. Install equipment in accordance with manufacturer's installation instructions. Install units plumb and level, firmly anchored in locations indicated, and maintain manufacturer's recommended clearances.

B. Support: Install equipment on 4" high concrete pad when installed on floor, with vibration isolators and restraints as required.

C. Accessories: Install equipment accessories not installed at factory and shown on the Drawings.

D. Connections: Connect all equipment and accessories as recommended by manufacturer for a complete installation.

E. Contractor shall not leave sharp exposed metal edges (bottom of threaded rods, mechanical equipment supports, etc.) that could otherwise present safety hazards to the building's occupants/work staff.

F. All penetrations made into other trades work are to be sealed to air tight/watertight condition. Ensure that all penetrations into ductwork have been sealed so that they are airtight. Access doors shall be of such construction as to make an airtight seal that will pass ductwork pressure testing. Penetrations through insulated systems, such as refrigerated rooms/equipment, etc., shall be insulated and sealed on both sides of penetration. Sealant on interior side of such insulated spaces/equipment shall be silicone recommended by manufacturer.

3.4 START-UP AND DEMONSTRATION/INSTRUCTION/SERVICE

A. Start-Up and Demonstration/Instruction: The Contractor shall start-up and demonstrate in the presence of the Commissioner, the proper operation of all equipment provided in this Contract. The Contractor shall perform necessary Interdisciplinary Tests and Functional Performance Tests (FPT) as listed in each technical Specification Section required by the Contract.

B. Service: Provide the services of a competent field service representative to furnish service to the facility during construction and during the warranty period. Service must be performed within 48 hours from the time of notification (24 hours for emergencies).

3.5 ADJUSTING AND CLEANING

A. Cleaning: Clean factory-finished surfaces. Repair any marred or scratched surfaces with manufacturer's touch-up paint.

3.6 TESTING

A. The Contractor shall furnish energy, fuel, oil, water, air, light and electrical instruments as required for all testing.

END OF SECTION 23 05 00

SECTION 23 05 13 - COMMON MOTOR REQUIREMENTS FOR HVAC EQUIPMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The following documents apply to all required work for the Project: (1) The Contract Drawings, (2) The Specifications, (3) The General Conditions, (4) The Addendum, (5) The Contract (City of New York Standard Construction Contract)

1.2 SUMMARY

A. Section includes general requirements for single-phase and polyphase, general-purpose, horizontal, small and medium, squirrel-cage induction motors for use on ac power systems up to 600 V and installed at equipment manufacturer's factory or shipped separately by equipment manufacturer for field installation.

1.3 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”.

1.5 COORDINATION

A. Coordinate features of motors, installed units, and accessory devices to be compatible with the following:
   1. Motor controllers.
   2. Torque, speed, and horsepower requirements of the load.
   3. Ratings and characteristics of supply circuit and required control sequence.
   4. Ambient and environmental conditions of installation location.

PART 2 - PRODUCTS

2.1 GENERAL MOTOR REQUIREMENTS

A. Comply with NEMA MG 1 unless otherwise indicated.

B. Comply with IEEE 841 for severe-duty motors.

2.2 MOTOR CHARACTERISTICS

A. Duty: Continuous duty at ambient temperature of 40 deg C and at altitude of 3300 feet above sea level.

B. Capacity and Torque Characteristics: Sufficient to start, accelerate, and operate connected loads at designated speeds, at installed altitude and environment, with indicated operating sequence, and without exceeding nameplate ratings or considering service factor.

2.3 POLYPHASE MOTORS

A. Description: NEMA MG 1, Design B, medium induction motor.

B. Efficiency: Energy efficient, as defined in NEMA MG 1.

C. Service Factor: 1.15.

D. Multispeed Motors: Variable torque.
   1. For motors with 2:1 speed ratio, consequent pole, single winding.
   2. For motors with other than 2:1 speed ratio, separate winding for each speed.

E. Multispeed Motors: Separate winding for each speed.

F. Rotor: Random-wound, squirrel cage.

G. Bearings: Regreasable, shielded, antifriction ball bearings suitable for radial and thrust loading.

H. Temperature Rise: Match insulation rating.

I. Insulation: Class F.

J. Code Letter Designation:
   1. Motors 15 HP and Larger: NEMA starting Code F or Code G.
   2. Motors Smaller than 15 HP: Manufacturer's standard starting characteristic.

K. Enclosure Material: Cast iron for motor frame sizes 324T and larger; rolled steel for motor frame sizes smaller than 324T.

2.4 POLYPHASE MOTORS WITH ADDITIONAL REQUIREMENTS

A. Motors Used with Reduced-Voltage and Multispeed Controllers: Match wiring connection requirements for controller with required motor leads. Provide terminals in motor terminal box, suited to control method.

B. Motors Used with Variable Frequency Controllers: Ratings, characteristics, and features coordinated with and approved by controller manufacturer.
   1. Windings: Copper magnet wire with moisture-resistant insulation varnish, designed and tested to resist transient spikes, high frequencies, and short time rise pulses produced by pulse-width modulated inverters.

2. Energy- and Premium-Efficient Motors: Class B temperature rise; Class F insulation.
3. Inverter-Duty Motors: Class F temperature rise; Class H insulation.
4. Thermal Protection: Comply with NEMA MG 1 requirements for thermally protected motors.

C. Severe-Duty Motors: Comply with IEEE 841, with 1.15 minimum service factor.

2.5 SINGLE-PHASE MOTORS

A. Motors larger than 1/20 hp shall be one of the following, to suit starting torque and requirements of specific motor application:
1. Permanent-split capacitor.
2. Split phase.
3. Capacitor start, inductor run.
4. Capacitor start, capacitor run.

B. Multispeed Motors: Variable-torque, permanent-split-capacitor type.

C. Bearings: Prelubricated, antifriction ball bearings or sleeve bearings suitable for radial and thrust loading.

D. Motors 1/20 HP and Smaller: Shaded-pole type.

E. Thermal Protection: Internal protection to automatically open power supply circuit to motor when winding temperature exceeds a safe value calibrated to temperature rating of motor insulation. Thermal-protection device shall automatically reset when motor temperature returns to normal range.

PART 3 - EXECUTION

3.1 EXECUTION REQUIREMENTS

A. Refer to DDC General Conditions for the requirements governing execution.

END OF SECTION 23 05 13

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SECTION 23 05 19 – METERS AND GAGES FOR HVAC PIPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum and (5) the Contract [City of New York Standard Construction Contract].

1.2 SUMMARY

A. Section includes:
   1. Glass thermometer
   2. Dial type insertion thermometer
   3. Remote mounting vapor activated thermometer
   4. Thermometer well
   5. Pressure gauge
   6. Pressure gauge cocks

B. Related Sections
   1. Section 23 05 00 - COMMON WORK RESULTS FOR HVAC

1.3 SUBMITTAL PROCEDURES

A. Refer to DDC General Conditions Section 01 33 00 “Submittal Procedures” for all submittals.

B. Shop Drawings: Provide list of identification wording, symbols, letter size, and color-coding.

C. Schedules:
   1. Provide product data on all items, including installation instructions and calibrated performance curves.
   2. Schedule for thermometers and gages indicating manufacturer's number, scale range, and location for each.

1.4 QUALITY ASSURANCE

A. Refer to DDC General Conditions Section 01 40 00 “Quality Requirements”.

B. Codes and Standards: Refer to DDC General Conditions
   1. UL Compliance: comply with applicable UL standards pertaining to gauges.
   2. ANSI and ISA Compliance: comply with applicable portions of ANSI and Instrument Society of America (ISA) standards pertaining to construction and installation of thermometers and gauges.

3. American Society of Mechanical Engineers (ASME): ASME B40.200, Thermometers, Direct Reading and Remote Reading; ASME B40.100, Pressure Gauges and Gauge Attachments.

PART 2 - PRODUCTS

2.1 GENERAL

A. Glass Thermometer:
   1. Provide fabricated from materials, and with capacities and ranges, designed and constructed for use in service.
      a. Case: die cast aluminum finished in baked epoxy enamel or powder coated, glass front, 9" long.
      b. Adjustable Joint: die cast aluminum, finished to match case, 180o adjustment in vertical plane, 360o adjustment in horizontal plane, with locking device.
      c. Tube and Capillary: non-toxic liquid filled, with magnifying lens, 1% scale range accuracy, shock mounted.
      d. Scale: non-reflective aluminum with permanently etched markings. The scale shall be V-shaped for optimum readability.
      e. Stem: copper-plated steel, brass, or aluminum for separable socket or installation in mounting bracket and of length to suit installation.
         1) Design for Air-Duct Installation: With ventilated shroud.
         2) Design for Thermowell Installation: Bare stem.
      f. Connector: 1¼", with ASME B1.1 screw threads.
      g. Range: conform to the following:
         1) Hot Water: 30oF - 240oF.
         2) Chilled Water: 0oF - 100oF.
         3) Dual Temperature Water: 0oF - 240oF.
         4) Condenser Water: 0oF - 160oF.
         5) Duct: 30oF - 180oF
   2. Manufacturers:
      a. Dwyer Instruments, Inc.
      b. Miljoco Corporation
      c. Marsh Bellofram
      d. Trerice (H.O.) Co.
      e. Weiss Instruments, Inc.
      f. Weksler Instruments
      g. Or approved equal

B. Dial Type Insertion Thermometers:
   1. Provide fabricated from materials, with capacities and ranges, designed and constructed for use in service.
      a. Type: bi-metal, stainless steel case and stem, 5" diameter dial, dust and leak proof, of stem diameter and length to suit installation.
      b. Accuracy: +1% of dial range.
      c. Range: conform to the following:
         1) Hot Water: 30oF - 240oF.

2) Chilled Water: 0oF - 100oF.
3) Condenser Water: 0oF - 160oF.
4) Oil: 30oF - 240oF.
5) Dual Temperature Water: 0oF - 240oF.
6) Duct: 30oF - 180oF.

2. Manufacturers:
   a. Dwyer Instruments, Inc.
   b. Miljoco Corporation
   c. Marsh Bellofram
   d. Taylor Instrument Co.
   e. Trerice (H.O.) Co.
   f. Weiss Instruments, Inc.
   g. Weksler Instruments
   h. Or approved equal

C. Remote-Mounting, Vapor-Actuated Dial Thermometers:
   1. Adjustable type of design and materials as follows:
      a. Case: dry type cast aluminum, 4½" diameter with holes for panel mounting.
      b. Element: bourdon tube or other type of pressure element.
      c. Movement: mechanical, with link to pressure element and connection to pointer.
      d. Dial: satin-faced, nonreflective aluminum with permanently etched scale markings.
      e. Pointer: red or other dark-color metal.
      f. Window: glass or plastic.
      g. Ring: stainless steel
      h. Connector: bottom or back union type.
      i. Thermal System: Liquid- or inert gas-filled bulb in copper-plated steel, aluminum, or brass stem for thermowell installation and of length to suit installation.
         1) Design for Air-Duct Installation: With ventilated shroud.
         2) Design for Thermowell Installation: Bare stem.
      j. Accuracy: +1% of range or +1 scale division to maximum of 1.5% of range.
      k. Range: conform to the following:
         1) Hot Water: 30oF - 240oF.
         2) Chilled Water: 0oF - 100oF.
         3) Dual Temperature Water: 0oF - 240oF.
         4) Condenser Water: 0oF - 160oF.
         5) Duct: 30oF - 180oF.
   2. Manufacturers:
      a. Trerice (H.O.) Co.
      b. Weiss Instruments, Inc.
      c. Weksler Instruments
      d. Or approved equal

D. Thermometer Wells
   1. Provide thermometer wells constructed of brass or stainless steel, pressure rated to match piping system design pressure; length as required to hold thermometer with a 2" extension for insulated piping. Provide cap nut with chain fastened permanently to thermometer well.
   2. Manufacturer: same as thermometers.

E. Duct-Thermometer Mounting Brackets: Flanged bracket with screw holes, for attachment to air duct and made to hold thermometer stem.

F. Pressure Gauges:
1. Provide pressure gauges of materials, capacities and ranges, designed and constructed for use in service as required.
   a. Type: General use, 1% accuracy, ANSI B40.1 grade A, bronze bourdon type, bottom connection unless otherwise indicated.
   b. Case: drawn steel or brass, cast aluminum, shatterproof glass lens, 4½" diameter.
   c. Connector: brass with 1/4" male NPT. Provide protective syphon when used for steam service.
   d. Scale: white coated aluminum, with permanently etched markings.
   e. Range: conform to the following:
      1) 1Vacuum: 30" Hg - 15 psi.
      2) Water: 0 - 200 psi.
      3) Steam: 0 - 100 psi.
2. Manufacturers:
   a. Ametek/U.S. Gauge.
   b. Dwyer Instruments, Inc.
   c. Ernst Flow Industries.
   d. Marsh Bellofram
   e. Miljoco Corporation.
   f. Trerice (H.O.) Co.
   g. Weiss Instruments, Inc.
   h. Weksler Instruments
   i. Or approved equal

G. Pressure Gauge Cocks:
1. Provide pressure gauge cocks between pressure gauges and gauge tees on piping systems. Construct gauge cock of brass with 1/4" female NPT on each end, and "T" handle brass plug.
   a. Syphon: 1/4" straight coil constructed of brass tubing or loop-shaped section of brass, stainless-steel or steel pipe with 1/4" male NPT on each end.
   b. Snubber: 1/4" brass bushing with corrosion resistant porous metal disc, through which pressure fluid is filtered. Select disc material for fluid served and pressure rating. Include extension for use on insulated piping.
2. Manufacturer: same as for pressure gauges.

H. Pressure and/or Temperature Gauge Connector Plugs:
1. Provide gauge connector plugs rated for 500 psi at 200oF. Construct of brass and finish in nickel-plate equip with 1/4” or 1/2" NPS fitting, with self-sealing valve core type neoprene gasketed orifice suitable for inserting 1/8" OD probe assembly from dial type insertion pressure and/or temperature gauge. Equip orifice with gasketed screw cap and chain. Provide extension, length equal to insulation thickness, for insulated piping.
2. Manufacturers:
   a. Miljoco Corporation.
   b. MG Piping Products Co.
   c. Peterson Equipment Co.
   d. Sisco, A Spedco, Inc. Co.
   e. Trerice (H.O.) Co.

f. Watts Regulator Co.
g. Or approved equal

PART 3 - EXECUTION

3.1 EXECUTION REQUIREMENTS

A. Refer to DDC General Conditions for execution requirements.

3.2 INSTALLATION

A. Temperature Gauges
1. Install temperature gauges in accordance with the manufacturer's printed installation instructions, in vertical upright position and tilted so as to be easily read by observer standing on the floor. Each thermometer shall have an isolation shutoff valve for service and removal. Install direct-mounted thermometers in thermowells.
a. Thermometers for Sensing Liquid Temperature: provide with separable sockets. Sockets for use in insulated piping, insulated tanks or similar equipment shall have extension lagging neck type, of length as required to compensate for insulation thickness, and proper immersion.
b. Duct Thermometer Support Flanges: install in wall of duct where duct thermometers are required or indicated on the Drawings. Attach to duct with screws.
c. Install remote-mounted thermometer bulbs in thermowells and install cases on panels; connect cases with tubing and support tubing to prevent kinks. Use minimum tubing length.
2. Locations: install in the following locations, and elsewhere as indicated on the Drawings:
a. At inlet and outlet of each heating and cooling zone.
b. At inlet and outlet of each boiler and chiller.
c. At inlet and outlet of each coil in air handling units and built-up central systems.
d. At inlet and outlet of each heat exchanger.
e. At inlet and outlet of each thermal storage tank.
f. At inlet and outlet of the pump and heater set of each oil burner.
g. At outside-air, return-air, and mixed-air ducts.
3. Thermometer Wells: install in piping tee where indicated on the Drawings, in vertical upright position. Fill well with oil or graphite, secure cap.
4. Temperature Gauge Connector Plugs: install in piping tee where required and indicated on the Drawings, located on pipe at most readable position. Secure cap.

B. Pressure Gauges
1. Install pressure gauges in accordance with the manufacturer's printed installation instructions, in piping tee with pressure gauge cock, located on pipe at most readable position.
2. Locations: install in the following locations, and elsewhere as indicated on the Drawings:
a. At each oil burner.
b. At suction and discharge of each pump.
c. At discharge of each pressure reducing valve.
d. At each boiler as shown on the Drawings.
e. At inlet and outlet of air cooled condensers and cooling tower.

f. At chillers inlet and outlet.

3. Pressure Gauge Cocks: install in piping tee with snubber. Install syphon for steam pressure gauges.
4. Gauge Connector Plugs: install in piping tee where required and indicated on the Drawings, located on pipe at most readable position. Secure cap.

3.3 ADJUSTING AND CLEANING

A. Calibrate meters according to manufacturer's written instructions, after installation.

B. Adjusting: adjust faces of gauges to proper angle for best visibility.

C. Cleaning: clean windows of thermometers and gauges and factory-finished surfaces. Replace cracked or broken windows; repair any scratched or marred surfaces with manufacturer's touch-up paint.

END OF SECTION 23 05 19

SECTION 23 05 23 - GENERAL DUTY VALVES FOR HVAC PIPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum and (5) the Contract [City of New York Standard Construction Contract].

1.2 SUMMARY

A. Provide labor, materials, equipment, accessories, services and test necessary to complete and make ready for operation, all valves shown on the Drawings and hereinafter specified in other Sections (HVAC). General Provisions for Heating, Ventilating and Air Conditioning Work, shall be referred to for general requirements.

B. Section includes:
1. Gate valves
2. Globe valves
3. Check valves
4. Plug valves
5. Cocks
6. Ball valves

C. Related Sections
1. Section 23 05 00 - COMMON WORK RESULTS FOR HVAC
2. Section 23 21 16 - HYDRONIC PIPING SPECIALTIES
3. Section 23 22 16 - STEAM AND CONDENSATE PIPING SPECIALTIES

1.3 SUBMITTAL PROCEDURES:

A. Refer to DDC General Conditions Section 01 33 00 “Submittal Procedures”.

B. Product Data
1. Submit manufacturer's product data including valve design, pressure and temperature classification, end connection details, seating materials, trim material and arrangement, required clearances and installation instructions.

C. Shop Drawings
1. Submit valve schedule showing manufacturer's figure number, location, and valve features for each required valve. Include list indicating valve and its application in the schedule.

D. Quality Control Submittals
1. Third-party testing affidavit for DZR brass (refer to Paragraph C of “Ball Valve” Article).

E. Maintenance Data
   1. Maintenance manuals

F. Special Tools
   1. Provide one plug valve wrench for every ten plug valves sized 2" and smaller, minimum of one. Provide wrench and set screw for each plug valve sized 2½" and larger.
   2. Padlock and two (2) keys for each lock.
   3. At least two dozen keys for the key operated air cocks shall be delivered to the Commissioner for operating these cocks.

1.4 QUALITY ASSURANCE:

A. Refer to DDC General Conditions Section 01 40 00 “Quality Requirements”.

B. Valves of one type throughout the Project shall be of the same manufacturer. Valve parts of same manufacturer, size and type shall be interchangeable.

1.5 DEFINITIONS

A. CWP: Cold Working Pressure

B. WSP: Working Steam Pressure

C. NRS: Non-Rising Stem

D. RS: Rising Stem

E. OS&Y: Outside Screw and Yoke

PART 2 - PRODUCTS

2.1 MATERIALS AND MANUFACTURERS

A. Provide all the valves shown on the Drawings (HVAC Work) and necessary for the control and easy maintenance of all piping and equipment. Valves shall be first quality, have proper clearance, followers in the packing glands, and shall seal tight at the specified test pressure. Each valve shall have the maker's name or brand, the figure or list number and the guaranteed working pressure cast on the body and cast or stamped on the bonnet. Valves which are concealed in hung ceilings or in furring and any other places shall be made accessible by means of access doors provided in the ceilings and furrings. Access Doors and shall be not less than 12" x 12", unless otherwise shown on the Drawings.
   1. Working Pressure: Valves shall be designed for steam working pressure of not less than 125 psi, for water of not less than 200 psi and 350 psig hydrostatic tests.

2. Wheels: Shut-off valves shall have self-cooling type metal hand wheels except where specified otherwise. For valves other than outside screw and yoke type gate valves, the valve stem shall be extended through the wheel and be provided with hexagon nuts to secure the wheel in place.
3. Chain and Sprockets: Chains shall hang within 5' of the floor. Provision shall be made for fastening the chains out the way. Where the Drawings indicate valves to be chain operated, they shall be provided with operating chains, sprockets and guides supplied by:
   a. Crane Co.
   b. Jenkins Bros.
   c. NIBCO, Inc.
   d. Or approved equal.

B. All valves shall be designed for packing under pressure with valve open or closed.

C. Solder end valves for refrigerant service shall be suitable for brazing.

2.2 GATE VALVES

A. All gate valves shall be of the solid wedge disk type.
   1. Bronze Gate Valve:
      a. Class 125, 125 psig WSP, 200 psig WOG, bronze body with integral seat and screw-in or union bonnet.
      b. Class 150, 150 psig WSP, 300 psig WOG, bronze body with integral seat, union bonnet (rising stem), threaded bonnet (non-rising stem), threaded ends
      c. Class 300, 300 psig WSP, 600 psig WOG, bronze body with union or bolted bonnet and stainless steel seat; threaded ends; rising or non-rising stem.

B. Manufacturers
   1. Crane Co.
   2. Hammond Valve Corp.
   3. NIBCO, Inc.
   4. Crane Co.; Crane Valve Group; Stockham Division.
   5. Milwaukee Valve Company
   6. Lunkenheimer/Cincinnati Valve Company
   7. Walworth Mfg. Co.
   8. Smith-Cooper International
   9. Conbraco Industries, Inc.; Apollo Valves.
   10. Crane Co.; Crane Valve Group; Jenkins Valves.
   11. Or approved equal.

2.3 GLOBE VALVES

A. Except valves in pneumatic and automatic temperature control piping and pneumatic and automatic valves, no globe valve of size larger than 1/2" shall be used, unless otherwise specified or shown on the Drawings. Where globe valves are approved, they shall be of the same grade called for other valves.

2.4 CHECK VALVES

A. Check valves shall be of heavy pattern, straightway, re-grinding type with renewable seat, ground seat and approved type renewable discs. The discs for check valves, of size larger than 2" may be bronze faced.

B. Swing Check Valves: horizontal swing, Y-pattern, cast-bronze body and cap or Dezincification Resistant (DZR) Lead-Free Brass Body and Cap, bronze or DZR Brass disc with rubber seat or composition seat, threaded or soldered end connections or cast-iron body and bolted cap, horizontal-swing bronze disc, flanged or grooved end connections. Face discs for cold water service can be:
1. Buna-N
2. Teflon
3. Milwaukee
4. Or approved equal

C. Silent Check Valves: cast-iron body, bronze trim, stainless steel spring and flanged end connections.

D. Lift check valves shall be globe style, streamline, spring loaded.

E. Manufacturers:
1. Crane Co.
2. Hammond Valve Corp.
3. Mueller Steam Specialty
4. NIBCO, Inc.
5. Crane Co.; Crane Valve Group; Stockham Division.
6. Milwaukee Valve Company
7. Walworth Mfg. Co.
8. Lunkenheimer/Cincinnati Valve Company
9. Crane Co.; Crane Valve Group; Jenkins Valves.
10. Jomar Valve
11. Or approved equal

2.5 COCKS

A. Gauge cocks shall have all brass construction, “T” or lever handles with screwed ends. Asbestos packed cocks are unacceptable.

2.6 PLUG VALVES

A. Lubricated Plug Valves shall be of the lubricated tapered plug type, with cast iron body. Plugs shall be Teflon coated and fitted with an "0" ring packing.

B. Tapered plugs shall be faced with a thermally bonded anti-friction material. Valves shall have "Sealed Port" lubrication system allowing complete lubrication of valve while in service, under line pressure, installed in any position.

2.7 VALVE OPERATORS

A. Provide suitable handwheel for gates, globes or angles, and drain valves.

B. Provide valves located more than 7' from floor in equipment room areas with chain operated sheaves. Extend chains to about 5' above floor and hook to clips arranged to clear walking aisles. Provide extended valve shafts, 4" min to keep chain away from pipe insulation.

2.8 VALVE FEATURES

A. Provide valves with features indicated and, where not otherwise indicated, provide proper valve features as determined for installation requirements.

B. Bypass: Comply with MSS SP-45, and except as otherwise indicated, provide manufacturer's standard bypass piping and valving.

C. Drain: Comply with MSS SP-45, and provide threaded pipe plugs.

D. Flanged: Valve flanges complying with ANSI B16.1 (cast iron), ANSI B16.5, (steel), or ANSI B16.24 (bronze).

E. Threaded: Valve ends complying with ANSI B2.1.

F. Butt-Welding: Valve ends complying with ANSI B16.25.

G. Socket-Welding: Valve ends complying with ANSI B16.11.

H. Solder-Joint: Valve ends complying with ANSI B16.22.

I. Flangeless: Valve bodies manufactured to fit between flanges complying with ANSI B16.1 (cast iron), ANSI B16.5 (steel), or ANSI B16.24 (Bronze).

2.9 BALL VALVES

A. Ball valves shall be two-piece full ported 600 W.O.G. bronze body or Dezincification Resistant (DZR) Brass body, solid blow-out proof stem, teflon seats, chrome plated bronze or brass ball and teflon seals, corrosion resistant steel lever handles with vinyl grips, balancing stop with screw or solder ends. Ball valves should be used for up to 2" sizes only.

1. Screw end ball valve shall be:
    a. Apollo Valves 77-100 Conbraco Industries, Inc.
    b. Crane 9211.
    c. Milwaukee BA-400.
    d. Hammond 8301A.
    e. NIBCO T-585-70.
    f. Stockham T-255-BR-R.
    g. Dwyer Series BV2MB.
    h. Smith-Cooper 1728155Series.
    i. Jomar Valve T-100NE.
    j. Or approved equal

2. Solder end ball valve shall be:
   a. Apollo Valves 77-200 Conbraco Industries, Inc.
   b. Crane 9212.
   c. Milwaukee BA450.
   d. Hammond 8311.
   e. NIBCO S-585-70.
   f. Stockham S-255-BR-R.
   g. Smith-Cooper 1728156Series.
   h. Jomar Valve S-100NE.
   i. Or approved equal.

B. Ball Valves for Press-fit Copper Fittings shall be two-piece bronze or brass body with full port, chrome or brass plated ball, blow-out proof stem and PTFE or RTFE seats, rated at 250 psi minimum with press fitting ends. Ball valves shall have a metal lever handle. Ball valves shall be:
   1. Viega Model 2970.10.
   2. NIBCO PC585-70.
   3. Apollo Valves 77W-140 Series.
   4. Jomar Valve JP-100.
   5. Or approved equal.

C. Ball valves made of brass alloy must contain dezincification resistant inhibitors and be thermally treated (annealed). Valves must be 3rd party tested by a Nationally Recognized Testing Lab in accordance with ISO 6509-1 and exhibit less than 200 microns of dezincification in accordance with ISO 6509-2.

PART 3 - EXECUTION

3.1 EXECUTION REQUIREMENTS

A. Refer to DDC General Conditions for execution requirements.

3.2 INSTALLATION

A. Except as otherwise indicated, comply with the following requirements:
   1. Install valves where required for proper operation of piping and equipment including valves in branch lines where necessary to isolate sections of piping. Locate valves so as to be accessible and so that separate support can be provided when necessary.
   2. Install valves with stems pointed up, in vertical position where possible, but in no case with stems pointed downward from horizontal plane unless unavoidable. Nonrising stem valves shall be used only where headroom prevents full extension of rising stems. Install valve drains with hose-end adapter for each valve that must be installed with stem below horizontal plane.
   3. Install gate valves for shut-off; to isolate equipment, parts of systems, and vertical risers and any banked system of coils and to separate each coil.
   4. Hose gate valves: Provide hose gate valves to drain the pipe at the low points of the system.
   5. Install globe for throttling service and control device.

6. Use tapered lubricated plug valves in water systems for throttling service and at the discharge of all pumps. Use nonlubricated plug valves only when shut-off or isolating valves are also provided.
7. Provide tapered lubricated 1" drain gate valves at main shut-off valves, and at all low points of piping and apparatus.
8. Provide 1" gate vent valves at all high points in the piping system.
9. Provide lift check valves at the discharge of all pumps as shown on the Drawings.
10. Outside Screw and Yoke Type: Gate valves in lines leading from the boilers to the boiler steam header, in boiler blow-off lines, and at other points so specified or shown on the Drawings shall have outside screw and yoke (OS&Y) with bronze rising stem.

B. Insulation: Where insulation is indicated, install extended-stem valves, arranged in proper manner to receive insulation.

C. Mechanical Actuators: Install mechanical actuators with chain operators where indicated on the Drawings. Extend chains to about 5'6" on the floor and hook to clips to clear aisle passage.

3.3 ADJUSTING AND CLEANING

A. Valve Adjustment: After piping systems have been tested and put into service, but before final testing, adjusting, and balancing, inspect each valve for possible leaks. Adjust or replace packing to stop leaks, replace valve if leak persists.

B. Cleaning: Clean factory-finished surfaces. Repair any marred or scratched surfaces with manufacturer's touch-up paint.

3.4 MINIMUM VALVE REQUIREMENTS

A. Shutoff valves shall be installed on the supply and return side of all heat exchangers.

B. Shutoff valves shall be installed on the building supply and return of central utility systems and district heating and cooling systems.

C. Shutoff valves shall be installed on the connection to any pressure vessel.

D. Shutoff valves shall be installed on both sides of a pressure-reducing valve.

E. Shutoff valves shall be installed on connections to mechanical equipment and appliances. This requirement does not apply to components of a hydronic system such as pumps, air separators, metering devices and similar equipment.

3.5 VALVE APPLICATION SCHEDULE

A. Cold Water in Buildings
1. 3" and Less: Solder end, Class 125, 125 psig WSP, 200 psig WOG, bronze body gates and horizontal swing checks.

2. 4" and Up: Flanged end, Class 125, 125 psig WSP, 200 psig WOG, OS&Y IBBM gates and IBBM horizontal swing checks.

B. Condensate Returns
1. 2" and Less: Threaded end, Class 125, 125 psig WSP, 200 psig WOG, bronze body gates and bronze body horizontal swing checks.
2. 2½" and Up: Flanged end, Class 125, 125 psig WSP, 200 psig WOG, OS&Y IBBM gates and IBBM silent checks.

C. Hot and Dual Water Temperature
1. 3" and Less: Threaded or solder ends, Class 125, 125 psig WSP, 200 psig WOG, bronze body gates; bronze body horizontal swing checks.
2. 4" and Up: Flanged ends; Class 125, 125 psig WSP, 200 psig WOG, OS&Y IBBM gates; and IBBM horizontal swing checks.

D. Option: Ball Valves, 3" in size and less with threaded, press fitting or solder ends as required by the particular application, may be used in lieu of bronze body gate valves for the following service applications, operating at a maximum of 125 psig WSP, 200 psig WOG: Chilled and Hot Water, and Cold Water in the Buildings.

3.6 VALVE MODEL NUMBERS

A. Gate valves – 3” and Less

Class 125:				
Manufacturer	Threaded NRS	Threaded RS	Solder NRS	Solder RS
Crane	438	428	1320	1330
Hamond	IB645	IB640	IB647	IB635
Nibco	T113	T111	S113	S111
Stockham	B-103	B-100	B-104	B-108
Milwaukee	105	148	115	149
Lukenheimer	2129	2127	2133	2132
Walworth	W4	W55	W4SJ	W55SJ
Apollo	102T	101T	102S	101S
Jenkins	992AJ	990AJ	993AJ	991AJ

Class 150:		
Manufacturer	Threaded NRS	Threaded RS
Crane	437	431UB
Hamond	IB646	IB629
Nibco	T113	T134
Stockham	B-128	B-120
Milwaukee	1140	1151
Lukenheimer	2153	2151
Walworth	W14	W56
Apollo	106T	107T
Jenkins	2310J	47CUJ

Class 300:		
Manufacturer	Threaded NRS	Threaded RS
Crane	636E	634E
Hamond	IB656	IB654
Nibco	T176SS	T174-SS
Stockham	B-147	B-145
Milwaukee	1186	1184
Lukenheimer	771	1962 (Class 350)
Walworth	N/A	N/A
Apollo	N/A	111T
Jenkins	2282J	2280UJ

B. Gate valves – 2” and Up

Class 125:		
Manufacturer	OS&Y RS	NRS
Crane	465-1/2	461
Hamond	IR1140	IR1138
Nibco	F-617-0	F-619
Stockham	G-623	G-612
Milwaukee	F-2885A	F-2882A
Lukenheimer	1430	1428
Walworth	W726	W719F
Apollo	611F	610F
Jenkins	454J(651J)	452J(326J)

C. Swing Check valves – 3" and Less

	Class 125	Class 125	Class 150
Manufacturer	Threaded Ends	Solder Ends	Threaded Ends
Crane	37	1340	141TF
Hamond	IB904	IB912	IB946
Nibco	T-413B	S-413B	T-433Y
Stockham	B-319Y	B-309Y	B-321
Milwaukee	509	1509	510T
Lukenheimer	2144	2145	230-70
Walworth	W506	3406SJ	W512
Apollo	161TF	161S	164T
Jenkins	996AJ	997AJ	4092J
Jomar Valve	T-511	S-511	T-511

Class 300	
Manufacturer	Threaded
Crane	76E
Hammond	IB949
Nibco	T-473-B
Stockham	B-375
Milwaukee	507
Lukenheimer	554-Y
Walworth	3428
Apollo	168T
Jenkins	4962J

D. Swing Check valves – 2” and Up

Class 125	
Manufacturer	Model
Crane	373
Hammond	IR1124
Nibco	F-918
Stockham	G-931
Milwaukee	F-2974A
Lukenheimer	1790 IBBM
Walworth	W928F
Apollo	910F
Jenkins	587J(624CJ)

E. Silent Check valves – 2½" and Up

Class 250	
Manufacturer	Model
Crane	39E
Hammond	IR322
Nibco	F-968-B
Stockham	F-947
Milwaukee	F2970M
Lukenheimer	N/A
Walworth	W8970F
Apollo	920F
Jenkins	339RJ(339J

F. Forged Steel Valve – 2 inch and Less:

Gate Valve - Class 800		
Manufacturer	Threaded OS&Y	Socket Weld OS&Y
RP&C	EF56D	EF57D
Newco	18TFS2	18SFS2
Vogt	12111	SW12111

Piston Check Valve - Class 800		
Manufacturer	Threaded	Socket Weld
RP&C	LF90A	LF91A
Newco	48TFS2	48SFS2
Vogt	701	SW701

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SECTION 23 05 48 - VIBRATION AND SEISMIC CONTROLS FOR HVAC

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum and (5) the Contract [City of New York Standard Construction Contract].

1.2 SUMMARY

A. Provide a complete system of vibration isolation for each item of HVAC, Plumbing and Drainage, and Electrical equipment and apparatus as specified herein, as shown on the Drawings and as needed for a complete and proper installation. Product specific requirements, General Provisions for Heating, Ventilating and Air Conditioning Work, shall be referred to for general requirements.

B. Section includes:
   1. Hanger Type Isolators

C. Related Sections
   1. Section 23 05 00 - COMMON WORK RESULTS FOR HVAC

1.3 SUBMITTAL PROCEDURES

A. Refer to DDC General Conditions Section 01 33 00 “Submittal Procedures” for all submittals.

B. Product Data: Submit Manufacturer’s Product Data for the vibration isolating supports required for each item of HVAC, Plumbing and Drainage, and Electrical equipment.

C. Submit schedule showing manufacturers’ mounting sizes and guarantee deflections.

D. Shop Drawings: Submit Shop Drawings for the vibration isolating supports required for each item of HVAC, Plumbing and Drainage, and Electrical equipment, showing details of intermediate structural steel members and method of attachment required for installation of vibration isolating devices.

E. Manufacturer's certification as specified in the Field Quality Control Article.

F. Maintenance data.

1.4 QUALITY ASSURANCE

A. Refer to DDC General Conditions Section 01 40 00 “Quality Requirements”.

B. Manufacturer's Regulating Requirements: Contractors shall determine vibration isolation sizes and locations per the criteria defined in Article 3.02.C.

C. Per Section MC 301.10 of the 2014 NYC Mechanical Code, where vibration isolation of equipment and appliances is employed, supplemental restraint shall be used to accomplish the support and restraint.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers:
1. Mason Industries, Inc.
2. Vibration Eliminator Co.
3. Vibration Mountings & Controls Inc.
4. Korfund Dynamics Co.
5. Or approved equal.

2.2 MATERIALS

A. Hanger Type Isolators:
1. Hanger type isolators shall consist of a steel housing incorporating a single or double neoprene-in-shear element or a steel spring, or a combination of these two isolators, as needed to achieve the required static deflection. Provide threaded rods for attachment of hanger to overhead structure and to equipment.

B. Manufacturers
1. Mason Industries, Inc.
2. Vibration Eliminator Co.
3. Vibration Mountings & Controls Inc.
4. Korfund Dynamics Co.
5. Or approved equal.

PART 3 - EXECUTION

3.1 EXECUTION REQUIREMENTS

A. Refer to DDC General Conditions for the requirements governing execution.

3.2 PREPARATION

A. For vibration isolation equipment installed indoors, all metal parts, including rails and bases, shall be painted at the factory with one coat of primer paint and one coat of aluminum paint. Other means or rust resisting painting may be accepted, subject to prior approval by the Commissioner.

3.3 SUPPLEMENTAL INSTALLATION

A. At each equipment location, provide the required deflection under the imposed load to produce uniform loading and deflection even when equipment weight is not evenly distributed. Jack inertia blocks and bases into position and wedge in place before spring loading; leveling bolts shall not be used as jacking screws. After equipment is in place and springs are loaded through leveling bolts, remove wedges and jacks. Isolators shall be suitable for the lowest operating speed of the equipment.

B. Where the floor is waterproofed or finished with waterproof cement, install vibration isolation in such manner that the waterproofing is not damaged.

C. Isolation equipment shall be in accordance with the following table:

LOWEST RPM	INCHES DEFLECTION (MIN.)	% EFFICIENCY (MIN.)	TYPE
1750 & over	.25	95	Single neoprene – in shear
1200-1749	.50	95	Double neoprene-in-shear
1000-1199	.75	95	Spring
570-999	1.25	90-95	Spring
520-569	1.5	90	Spring
330-519	2.0	80-90	Spring
Up to 329	3.5	80	Spring

D. Install combination spring and double deflection neoprene position hangers on the suction and discharge piping at each circulating pump. Each hanger shall be located on the pump side of the flexible hose connection.

E. Metal piping connected to power driven equipment shall be resiliently supported from or on the building structure from the power driven equipment for a distance of the maximum of 50 pipe diameters or the first three pipe hangers, whichever is the longest length. The isolators shall be pre-compressed spring and neoprene type hangers. Pre-compressed spring and neoprene type hangers must also be used in all transverse braced isolated locations. Horizontal runs in all other locations throughout the building shall be isolated by spring and neoprene hangers that need not be pre-compressed. Floor supported piping shall rest on isolators such as:
1. Mason Industries SLR spring mounts
2. Vibration Eliminator Co.
3. Vibration Mountings & Controls Inc.
4. Korfund Dynamics Co.
5. Or approved equal.

F. The resilient isolators shall have a minimum static deflection of 1” for all piping with a 4” or larger in actual outside diameter and 1/2” (12.7 mm) for piping with less than 4” in actual outside diameter.

G. Piping connected to fluid pressure-reducing valves shall be resiliently isolated for a distance of 50 pipe diameters from pressure reducing valves and isolators shall provide a minimum static deflection of 1/2”.

3.4 SCHEDULES

A. Provide vibration isolation supports for HVAC equipment as indicated in this schedule. Contractor shall submit a schedule for approval by the Commissioner indicating the type of support for each item of Plumbing & Drainage Equipment and each item of Electrical Equipment.

EQUIPMENT	LOCATION	TYPE OF SUPPORT
reciprocating Pump, all H.P.	cellar/basement	none required
Pipe, hot and/ or chilled water	at pumps	spring and D.D.* hanger
*D.D. = Double Deflecting		

3.5 FIELD QUALITY CONTROL

A. On completion of the vibration isolation system herein specified, the representative of the vibration isolation manufacturer shall inspect the completed systems and report in writing any installation error, improperly selected isolation devices, or any other faults that could affect performance. Submit report indicating steps taken to properly complete the isolation work. Both of these reports shall be reviewed by the Commissioner for final approval.

END OF SECTION 23 05 48

SECTION 23 05 53 - IDENTIFICATION FOR HVAC PIPING AND EQUIPMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum and (5) the Contract [City of New York Standard Construction Contract].

1.2 SUMMARY

A. Section includes:
1. Painted Identification Materials.
2. Plastic Pipe Markers.
3. Underground-Type Plastic Line Marker.
4. Plastic Duct Markers.
5. Valve Tags.
6. Valve Schedule Frames.
7. Plastic Equipment Markers.
8. Plasticized Tags.
9. Plastic Labels.
10. Access Panel and Door Markers.
11. Key Identification Tags.
12. Key Identification Schedules.

B. Related Sections
1. Section 23 05 00 - COMMON WORK RESULTS FOR HVAC
2. Section 23 22 23 - STEAM CONDENSATE PUMPS
3. Section 23 57 00 - HEAT EXCHANGERS FOR HVAC

1.3 SUBMITTAL PROCEDURES

A. Refer to DDC General Conditions Section 01 33 00 “Submittal Procedures” for all submittals.

B. Shop Drawings: Provide list of identification wording, symbols, letter size, and color-coding.

C. Schedules:
1. Submit valve schedule for each piping system, typewritten and reproduced on 8½" x 11" bond paper. Include valve number, piping system, system abbreviation (as shown on tag), location of valve (room or space), and variations for identification (if any). Mark valves that are intended for emergency shut-off and similar special uses by special "flags" in margin of schedule. In addition to mounted copies, furnish extra copies for the maintenance manuals specified in DDC General Conditions.

2. Submit key identification schedule typewritten and reproduced on 8½" x 11" bond paper. Include location of equipment and/or unit that utilize the respective key and variations for identification (if any). Furnish extra copies for the maintenance manuals specified in DDC General Conditions.

1.4 QUALITY ASSURANCE

A. Refer to DDC General Conditions Section 01 40 00 “Quality Requirements”.

B. Codes and Standards
1. ANSI Standards: Comply with ANSI A13.1-2015 for lettering size, length of color field, colors, and viewing angles

PART 2 - PRODUCTS

2.1 MATERIALS AND MANUFACTURERS

A. Provide manufacturer's standard products of categories and types required for each application as referenced in other Sections (HVAC), shown on the Drawings and/or Schedules. Where more than single type is specified for application, selection is the Commissioner’s option, but provide single selection for each product category.

B. Paintings and coatings used in the interior of building to cover insulation for identification purposes shall not exceed the VOC content limits established in the Green Seal Standard GS-11 Paints, first edition, May 20, 1993.

C. Paints and coatings used in the interior of building for identification purposes of piping shall not:
1. Exceed the VOC content limits established in the Green Seal Standard GS-11 Paints, first edition, May 20, 1993.
2. Exceed the VOC content limit of 250 g/L established in the Green Seal Standard GC-03, Anti-Corrosive Paints, second edition, January 7, 1997.

D. All adhesives and sealants used for tags and charts shall comply with the South Coast Air Quality Management District (SCAQMD) Rule #1168; VOC limits shall comply with the limits indicated in The New York City Environmentally Preferable Purchasing (EPP) Minimum Standards for Goods. Those limits correspond to an effective date of the SCAQMD Rule #1168 of July 1, 2005, and Rule Amendment date of January 7, 2005.

E. Painted Identification Materials:
1. Stencils: fiberboard stencils, prepared for required applications with letter sizes generally complying with recommendations of ANSI A13.1-2015.
a. Stencil Paint: exterior type stenciling enamel except as otherwise indicated on the Drawings; either brushing grade or pressurized spray-can form and grade.
b. Identification Paint: enamel of colors indicated or, if not otherwise indicated for piping systems, comply with ANSI A13.1-2015 for colors or as selected by the Commissioner.

F. Plastic Pipe Markers:
   1. Snap-On Type: Pre-printed, semi-rigid snap-on, color-coded pipe markers, complying with ANSI A13.1-2015 or as selected by the Commissioner.
   2. Provide 1" thick molded fiberglass insulation with jacket for the plastic pipe marker to be installed on uninsulated pipes subjected to fluid temperatures of 125oF or greater. Cut length to extend 2" beyond each end of plastic pipe marker.
   3. Small Pipes: For external diameters less than 6" (including insulation if any), provide full-band pipe markers, extending 360o around pipe, fastened by snap-on application of pre-tensioned semi-rigid plastic pipe marker.
   4. Large Pipes: For external diameters of 6" and larger (including insulation if any), provide either full-band or strip-type pipe markers, but not narrower than 3 times letter height, fastened by strapped-to-pipe (or insulation) application of semi-rigid type, with stainless steel bands.
   5. Lettering: Pre-printed nomenclature that best describes piping system in each instance, as shown on the Drawings or as selected by the Commissioner in cases of variance with name shown or specified.
   6. Arrows: Print each pipe marker with arrows indicating direction of flow, either integrally with piping system service lettering (to accommodate both directions), or as separate unit of plastic.

G. Valve Tags
   1. Brass Valve Tags: 19-gage polished brass valve tags with stamp-engraved piping system abbreviation in 1/4" high letters and sequenced valve numbers 1/2" high, and with 5/32" hole for fastener.
      a. Provide 2" sq tags.
      b. Numbers and letters shall be block type, indented and filled with durable black compound.
   2. Valve Tag Fasteners: solid brass chain (wire link or beaded type), or solid brass S-hooks of the size required for proper attachment of tags to valves, and manufactured specifically for that purpose.

H. Valve Schedules Frames: For each page of valve schedule, provide safety glass in wood or aluminum self-closing frame, with screws for mounting on masonry walls.

I. Plastic Equipment Markers:
   1. Laminated plastic, color-coded equipment markers. Conform to the following color code if not specified otherwise:
      a. Green: Cooling equipment and components.
      b. Yellow: Heating equipment and components.
      c. Yellow/Green: Combination cooling and heating equipment and components.
      d. Brown: Energy reclamation equipment and components.
      e. Blue: Equipment and components that do not meet any of the above criteria.
      f. For hazardous equipment, use colors and designs recommended by ANSI A13.1-2015.
   2. Nomenclature: Include the following matching terminology on schedules and Drawings as closely as possible:
      a. Name and plan number.
      b. Equipment service.
      c. Design capacity.
      d. Other design parameters such as pressure drop, entering and leaving conditions, rpm, and all other items and accessories.
   3. Size: approximate 2½" x 4" markers for control devices, dampers and valves; and 4½" x 6" for equipment.

J. Plasticized Tags: Pre-printed or partially pre-printed accident-prevention tags, of plasticized card stock with matt finish suitable for writing, approximately 3¼ " x 55/8", with brass grommets and wire fasteners, and with appropriate pre-printed wording including large-size primary wording (as examples: DANGER, CAUTION, DO NOT OPERATE).

K. Plastic Labels: Printed labels created with label printer/maker for marking white iron of ceiling grid for equipment and access concealed by the hung ceiling. Labels shall be 1/2" high black letters on clear background.

L. Key Identification Tag: Provide identification tag on every key provided as part of the maintenance materials specified in their respective sections. Tags shall be plastic stamped or engraved with 1/4" high letter for abbreviated name of unit and/or equipment and 1/2" for the number and with 5/32" hole for fastener. The tag shall be of the same color as the equipment with black lettering. Provide 2" square or round tags. Tag Fasteners: solid brass chain (wire link or beaded type), or solid brass S-hooks of the size required for proper attachment of tags to valves, and manufactured specifically for that purpose.

M. Lettering and Graphics:
1. Coordinate names, abbreviations and other designations used in the identification work with corresponding designations shown on the Drawings or Schedules, or specified. Provide numbers, lettering and wording as indicated or, if not otherwise indicated, as recommended by manufacturers or as required for proper identification and operation/maintenance of systems and equipment.
2. Multiple Systems: Where multiple systems of same generic name are shown on the Drawings or Schedules and specified, provide identification that indicates individual system number as well as service (as examples: Boiler No. 2, Air Supply No. 1).

N. Manufacturers
1. Allen Systems, Inc.
2. Brady (W.H.) Co.; Signmark Div.
3. Industrial Safety Supply Co., Inc.
4. Seton Name Plate Corp.
5. Brimar Industries, Inc.
6. Marking Services Inc.
7. EMED Co., Inc.
8. Or approved equal.

PART 3 - EXECUTION

3.1 EXECUTION REQUIREMENTS

A. Refer to DDC General Conditions for the requirements governing execution.

3.2 INSTALLATION

A. Coordination: Where identification is to be applied to surfaces that require insulation, painting or other covering or finish, including valve tags in finished mechanical spaces, install identification after completion

of covering and painting. Install identification prior to installation of acoustical ceilings and similar removable concealment.

B. Piping System Identification: Install pipe markers and color bands and include arrows to show direction wherever piping is exposed to view in occupied spaces, machine rooms, accessible maintenance spaces (shafts, tunnels, plenums) and exterior non-concealed locations.
   1. Near each valve and control device.
   2. Near each branch, excluding short take-offs for terminal units; mark each pipe at branch, where there could be question of flow pattern.
   3. Near locations where pipes pass through walls or floors/ceilings, or enter non-accessible enclosures.
   4. Near major equipment items and other points of origination and termination.
   5. Spaced intermediately at maximum spacing of 50' along each piping run, except reduce spacing to 25' in congested areas of piping and equipment.
   6. On piping above removable acoustical ceilings except omit intermediately spaced markers.

C. Valve Identification:
   1. Provide valve tag on every valve, cock and control device in each piping system; exclude check valves, valves within factory-fabricated equipment units, and shut-off valves at HVAC terminal devices and similar rough-in connections of units. List each tagged valve in valve schedule for each piping system.
      a. Tagging Schedule: Comply with requirements of "Valve Tagging Schedule" at end of the Section.
   2. Mount valve schedule on frames located in machine rooms where indicated or, if not otherwise indicated, where directed by the Commissioner.
   3. Where more than one major machine room is shown on the Project, mount valve schedule in each major machine room, and repeat only main valves that are to be operated in conjunction with operations of more than single machine room.

D. A permanent factory-applied name-plate(s) shall be affixed to appliances (reference Section MC 301.6 of the 2014 NYC Mechanical Code) on which shall appear in legible lettering, the manufacturer’s name or trademark, the model number, serial number and the seal or mark of the approved agency. A label shall also include the following:
   1. Electrical equipment and appliances: Electrical rating in volts, amperes and motor phase; identification of individual electrical components in volts, amperes or watts, motor phase; Btu/h output; and required clearances.
   2. Electric comfort heating appliances: Name and trade-mark of the manufacturer; the model number or equivalent; the electric rating in volts, ampacity and phase; Btu/h (W) output rating; individual marking for each electrical component in amperes or watts, volts and phase; required clearances from combustibles.

E. Mechanical Equipment Identification:
   1. Install plastic equipment marker near each major item of mechanical equipment and each operational device, as specified herein if not otherwise specified for each item or device in their respective sections. Provide signs for the following general categories of equipment and operational devices.
      a. Main control and operating valves, including safety devices.
      b. Meters, gauges, thermometers and similar units.
      c. Strainers, filters, humidifiers, water treatment systems, thermostatic traps and similar equipment.

d. Primary balancing dampers, mixing boxes.

2. Provide permanent factory-applied nameplate(s) for all appliances as defined in Article 3.01.F above including the following:
   a. Pumps, compressors, chillers, condenser and similar motor-driven units
   b. Converters, heat exchangers, coils, evaporators, heat recovery units and similar equipment
   c. Fans, blowers and VAV terminals.
3. Plastic equipment marker lettering Size: Minimum 1/4" high lettering for name of unit where viewing distance is less than 2', 1/2" high for distances up to 6', and proportionally larger lettering for greater distances. Provide secondary lettering 2/3 to 3/4 of size of principal lettering.
4. Text of Signs: In addition to name of identified unit, provide lettering to distinguish between multiple units, inform operator of operational requirements, indicate safety and emergency precautions, and warn of hazards and improper operations.
5. Optional Use of Plasticized Tags: At the Commissioner's option, where equipment to be identified is concealed above acoustical ceiling or similar concealment, plasticized tags shall be installed within concealed space to reduce amount of text in exposed sign (outside concealment).
   a. Operational valves, dampers and similar minor items located in non-occupied spaces (including machine rooms) shall be identified by plasticized tags.
6. Key Identification Tag: Provide an identification tag on each and every key provided under this project and deliver to the Commissioner. Follow the valve tagging schedule specified herein for the numbering.

F. Concealed Equipment, Dampers, Access Doors, etc.
   1. Equipment (e.g. VAV boxes), dampers, access doors, filters, etc. concealed above the hung ceiling shall have plastic labels placed on the white iron of the hung ceiling before the ceiling tiles are installed to allow easy location of the devices once the hung ceiling is installed.
   2. Devices shall be labeled by type and the number utilized on the final approved drawings to identify the device (if item is numbered).

3.3 VALVE TAGGING SCHEDULES

A. Numbers: Arrange the numbering of valves in the following manner:
   1. In Basement, Cellar, or Pipe Space below First Floor - No. 1 to No. 999.

B. In no case shall a number applying to one story, be assigned to a valve located in another story.

C. For other information, refer to the Drawings.

END OF SECTION 23 05 53

SECTION 23 05 93 - TESTING, ADJUSTING, AND BALANCING FOR HVAC

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum and (5) the Contract [City of New York Standard Construction Contract].

1.2 SUMMARY

A. Provide Cleaning and Pressure/Operational Testing for the HVAC Work done on this Project, as specified herein, and as needed for a complete and proper installation. Equipment and systems Interdisciplinary/ Functional Performance Testing is defined in the respective Specification Sections. All testing is to be performed by the Contractor unless specifically indicated otherwise.

B. Section includes:
   1. System Testing
      a. Equipment testing: Vacuum pump
      b. Chilled water system testing.
      c. Steam heating system testing.
   2. System cleaning
   3. System balancing
      a. Air balancing (HVAC system; Building Toilet Exhaust)
      b. Hydronic system balancing (HVAC system; building condensate recovery system)

C. Related Sections
   1. Section 23 05 00 - COMMON WORK RESULTS FOR HVAC
   2. Section 23 08 00 – COMMISSIONING FOR HVAC SYSTEMS

1.3 SUBMITTAL PROCEDURES

A. Refer to DDC General Conditions Section 01 33 00 “Submittal Procedures” for all submittals.

B. Testing Product Data: List of instruments to be used for each test. Include instrument calibration requirements as specified.

C. Testing Quality Control Submittals
   1. Submit Field Cleaning/Test Results for the Following:
      a. Vacuum Pump/System Piping Test.
      b. Chilled Water System: Cleaning and Operational Tests.
      c. Steam Heating Systems: Cleaning and Operational Tests.
      d. Ductwork Pressure Leakage Tests.
      e. Post Cleaning Report.

D. Testing Schedule and Procedures Plan: Submit time schedule and copy of the step-by-step testing procedures for each system. Isolating valves and flanges, vent fittings and pressure gauges utilized during the testing shall be indicated on the submitted appropriate shop drawings.

E. For Balancing, submit blank forms of reports indicating all data to be included and step-by-step procedures**.** All forms submitted shall be the standard forms issued by NEBB or AABC or as illustrated in the SMACNA HVAC SYSTEMS Testing, Adjusting & Balancing Manual. Custom made forms are not acceptable.

1. Sample of Report Forms: Submit standard report forms according to AABC, NEBB or SMACNA standards as an example of the forms that will be submitted when the balancing report is completed. Forms shall include the following information:
   a. Title Page:
      1) Company name
      2) Company address
      3) Company telephone number
      4) Project name
      5) Project location
      6) Project Architect
      7) Project Engineer
      8) Project Contractor
   b. Instrument List:
      1) Instrument
      2) Manufacturer
      3) Model
      4) Serial number
      5) Range
      6) Calibration date
   c. System Diagrams: Include schematic layouts of air, hydronic and steam distribution systems. Present each system with single-line diagram and include the following:
      1) Quantities of outside, supply, return, and exhaust airflows
      2) Water and steam flow rates
      3) Duct, outlet, and inlet sizes
      4) Pipe and valve sizes and locations
      5) Terminal units, including VAV
      6) Balancing stations
      7) Position of balancing devices
   d. Air Moving Equipment: (Supply Fans)
      1) Location
      2) Manufacturer
      3) Model
      4) Airflow, specified and actual
      5) Return airflow, specified and actual
      6) Outside airflow, specified and actual
      7) Total static pressure (total external), specified and actual
      8) Inlet pressure
      9) Discharge pressure
      10) Fan RPM
   e. Exhaust Fan Data:

1) Location
2) Manufacturer
3) Model
4) Airflow, specified and actual
5) Total static pressure (total external) specified and actual
6) Inlet pressure
7) Discharge pressure
8) Fan RPM

f. Electric Motors:
1) Manufacturer
2) HP/BHP
3) Phase, voltage, amperage; nameplate, actual, no load
4) RPM
5) Service factor
6) Starter size, rating, heater elements

g. V-Belt Drive:
1) Identification/location
2) Required driven RPM
3) Driven sheave, diameter and RPM
4) Belt, size and quantity
5) Motor sheave, diameter and RPM
6) Center to center distance, maximum, minimum, and actual

h. Duct Traverse (single measurements without traversing the ducts are not acceptable):
1) System zone/branch
2) Duct size
3) Area
4) Design velocity
5) Design airflow
6) Test velocity
7) Test airflow
8) Duct static pressure
9) Air temperature
10) Air correction factor

i. Air Distribution Test Sheet:
1) Air outlets and inlets number
2) Room number/location
3) Outlets and inlets type
4) Outlets and inlets size
5) Area factor
6) Design velocity
7) Design airflow
8) Test (final) velocity
9) Test (final) airflow
10) Percent of design airflow

j. Outlets and Inlets Unit Data:
1) Manufacturer
2) Type, constant, variable, single duct
3) Identification/number

4) Location
5) Model
6) Size
7) Minimum static pressure, specified
8) Minimum design airflow, specified and actual
9) Maximum design airflow
10) Maximum actual airflow
11) Inlet static pressure, actual

k. Pump Data:
1) Identification/number
2) Manufacturer
3) Size/model
4) Impeller
5) Service
6) Design flow rate, pressure drop, BHP
7) Actual flow rate, pressure drop, BHP
8) Discharge pressure
9) Suction pressure
10) Total operating head pressure
11) Shut off, discharge and suction pressures
12) Shut off, total head pressure

l. Chillers:
1) Identification/number
2) Manufacturer
3) Capacity
4) Model
5) Evaporator entering water temperature, design and actual
6) Evaporator leaving water temperature, design and actual
7) Evaporator pressure drop, design and actual
8) Evaporator water flow rate, design and actual
9) Condenser entering water temperature, design and actual
10) Condenser leaving water temperature, design and actual
11) Condenser pressure drop, design and actual
12) Condenser water flow rate, design and actual

m. Air Cooled Condensers and Condensing Units:
1) Identification/number
2) Location
3) Manufacturer
4) Model
5) Design and actual pressure drop, flow and temperatures.

n. Cooling Coil Data:
1) Identification/number
2) Location
3) Service
4) Manufacturer
5) Airflow, design and actual
6) Entering air DB temperature, design and actual
7) Entering air WB temperature, design and actual

8) Leaving air DB temperature, design and actual
9) Leaving air WB temperature, design and actual
10) Water flow, design and actual
11) Water pressure drop, design and actual
12) Entering water temperature, design and actual
13) Leaving water temperature, design and actual
14) Air pressure drop, design and actual

o. Heating Coil Data:
1) Identification/number
2) Location
3) Service
4) Manufacturer
5) Airflow, design and actual
6) Water flow, design and actual
7) Water pressure drop, design and actual
8) Entering water temperature, design and actual
9) Leaving water temperature, design and actual
10) Entering air temperature, design and actual
11) Leaving air temperature, design and actual
12) Air pressure drop, design and actual

p. Duct Leak Test (as described in SMACNA):
1) Description of ductwork under test
2) Duct design operating pressure
3) Duct test static pressure, actual
4) Duct capacity, airflow
5) e. Test apparatus
a) Blower
b) Orifice, tube size
c) Orifice size
d) Calibrated
6) Test orifice differential pressure

F. For balancing: Submit copies of the marked-up Contract Drawings and Certificate of Conformance Certification that assures that the balancing specialist has performed their contracted services in accordance with the applicable agency's (NEBB, AABC or TABB) standards and procedures. Copies of Contract Drawings shall be marked up and indicate outlet/inlet diffuser, register and grille identification.

G. For balancing: Submit certified reports signed by a Professional Engineer, licensed in the State of New York, referred to in Article 1.04.A. Submit final testing and balancing results on applicable report forms, as approved and as furnished by the agency that is certifying the independent member firm performing the Work. The certifying agencies' Instrument Calibration Report should be included in the submission of the completed final balancing forms. Lack of submission of the certifying agencies' Instrument Calibration Report shall be cause for rejection. The reports shall be certified proof that the systems have been tested, adjusted and balanced; are an accurate representation of how the systems have been installed and are operating; and are an accurate record of all final quantities measured to establish normal operating values of the systems. Each final system report form shall bear the signature of the person performing the Work and the signature of a Professional Engineer, licensed in the State of New York, referred to in Article 1.04.A.

Include in final reports uncorrected installation deficiencies noted during the process of adjusting and balancing and applicable explanatory comments.

1.4 QUALITY ASSURANCE

A. Refer to DDC General Conditions Section 01 40 00 “Quality Requirements”.

B. Codes and Standards
   1. Regulatory Requirements
      a. Perform testing of factory-fabricated equipment in accordance with the New York City Department of Buildings.
      b. Perform field-testing of piping systems in accordance with the New York City Department of Buildings.

1.5 BALANCING PERFORMANCE REQUIREMENTS

A. Procedures, measurements, instruments and final reports for adjusting and balancing work shall comply with the applicable provisions of the codes, standards, recommendations of the following:
   1. American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE)
   2. Sheet Metal and Air Conditioning Contractors’ National Association (SMACNA) HVAC SYSTEMS Testing, Adjusting & Balancing Manual (latest edition)
   3. National Environmental Balancing Bureau (NEBB)
   4. Associated Air Balance Council (AABC)
   5. Testing, Adjusting and Balancing Bureau (TABB)
   6. New York City Construction Codes

B. The final air delivery or intake of each diffuser, grille and register shall be as designed or within 10% of the airflow rates shown on the Drawings.

C. The final fan airflow rate and static pressure rise across the fan shall be within 10% above the design value at design speed.

1.6 BALANCING JOB CONDITIONS

A. Contractor shall have the balancing Subcontractor review all the work with the respective manufacturers of the equipment and devices involved and shall coordinate all the Work. The balancing Subcontractor shall examine the Drawings and Specifications to become familiar with Project requirements and to discover conditions in systems' designs that may preclude proper adjusting and balancing of systems and equipment.

B. Provide balancing dampers, pressure taps, gauges, valves, and any other items and components as required for a properly balanced system, whether or not specified herein or shown on the Drawings, all at no additional cost to the Commissioner. Adjustment or replacement of parts recommended by the balancing specialist shall be made in strict accordance with the respective manufacturer's recommendations.

C. Contractor shall have the Temperature Control Subcontractor set the adjustment of the automatically operated dampers, control valves and all the other items and accessories to operate as required by the balancing Subcontractor.

1.7 PROJECT CONDITIONS

A. Protection: During Test Work, protect controls, gauges and accessories that are not designed to withstand test pressures. Do not utilize permanently installed gauges for field-testing of systems.

1.8 SEQUENCING AND SCHEDULING

A. Transmit written notification of proposed date and time of all tests to the Commissioner at least 5 days in advance of such tests.

B. Perform Cleaning and Testing Work in the presence of the Commissioner.

C. Pressure test piping systems inside buildings, at the roughing-in stage of installation, before piping is enclosed by construction work and at other times as directed. Perform test operations in sections as required and directed, to progress the Work in a satisfactory manner and not delay the general construction of the building. Valve or cap-off sections of piping to be tested. Contractor can utilize valves required to be installed in the permanent piping systems, or temporary valves or caps as required to perform the Work. The contractor is responsible to provide all isolation valves/flanges required in order to perform the pressure testing. Testing valves/flanges shall be indicated on the submitted shop drawings. Contractor shall also provide all vents required to vent the air out of the piping prior to performing a hydrostatic test. Fittings for pressure gauges shall be located at the top of the risers. Vent fittings and pressure gauge fittings shall be shown on the submitted shop drawings.
   1. 120-Hour Operational Tests:
      a. For mechanical systems that are connected to or part of a Building Management System, the 120-hour test shall consist of multiple contiguous occupied and unoccupied periods to verify that the systems perform the required sequence of operations in both the occupied and unoccupied time periods. The Contractor shall set up the system for the 120-hour test. The setup of the 120-hour Operational Testing shall be witnessed by the Commissioner.
   2. Accepted Tolerance Levels:
      a. During occupied and unoccupied periods, the control loops under test shall maintain control of the process variable within the following tolerances:
         1) Room Temperature Loops +1°F
         2) Room Humidity +5% rated error of Transmitter
   3. Perform final environmental systems balancing after cleaning and after all BMS/Department of Design and Construction work and Functional Performance Tests associated with checking the Sequence of Operations but before the 120-hour Operational Testing work has been completed.
   4. Perform balancing Work in the presence of the Commissioner.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Certified Test Equipment and Instruments: Type and kind shall be as required for the particular system under test. All gauges, instruments and test devices shall be provided with a certificate of calibration and calibration curve or letter indicating that a minimum of five (5) test points have been calibrated. The certificate and letter must show date of last calibration. The calibration date must be within a year of the testing date.

B. Test Media: Provide as specified for the particular piping or system under test.

C. Cleaning Agent (chemical solution, steam, water): As specified for the particular piping, apparatus or system being cleaned.

PART 3 - EXECUTION

3.1 PRELIMINARY WORK

A. Refer to DDC General Conditions.

B. Thoroughly clean pipe and tubing prior to installation. During installation, prevent foreign matter from entering the systems. Prevent if possible and remove stoppages or obstructions from piping and systems.

C. Thoroughly clean compressed air, control air, refrigerant pipe and similar systems prior to pressure or vacuum testing.

3.2 CONTRACTOR'S RESPONSIBILITY

A. The Contractor shall provide gas, refrigerant, energy, fuel, oil, water, air, light and electrical instruments as required for all testing (unless otherwise noted). Special Inspections are performed by the City of New York.

B. The Contractor shall furnish labor, material, and instruments necessary to conduct all acceptance tests at no additional cost to the City of New York including testing associated with Special Inspections. Contractor shall provide access for Special Inspections and testing laboratory services.

3.3 TESTING OF EQUIPMENT, APPARATUS AND APPURTENANCES (Reference: BC 1704.25, MC 1011)

A. Vacuum Pump: During 120-Operational hours, the vacuum pumps shall be tested as follows:
   1. With all valves open and with no steam on the system, the vacuum pump shall raise a vacuum of at least 20-inch HG measured at the gauge of the pump. With the pump not operating for one hour, the loss of vacuum shall not exceed 3-inch HG.

2. With the pumps operating alternately, and with steam on the entire system, the pumps shall each maintain a vacuum of 5½ inch HG, as indicated by gauge on receiving tank at pumps.

B. Test gauges. An indicating test gauge shall be connected directly to the boiler or pressure vessel where it is visible to the operator throughout the duration of the test. The pressure gauge scale shall be graduated over a range of not less than one and one-half times and not greater than four times the maximum test pressure. All gauges utilized for testing shall be calibrated and certified by the test operator. Reference Section MC 1011.2.

3.4 HEATING, VENTILATING AND AIR CONDITIONING SYSTEMS - CLEANING AND OPERATIONAL TESTING

A. Steam Heating Systems
1. Cleaning: Upon completion of pressure and miscellaneous tests, place the system in automatic operation, at a steam pressure as directed. Rid the system of dirt, sludge and foreign substances by means of a 4-hour steam blow down period, during which time waste the condensate. Periodically blow down strainers during cleaning operations and totally clean strainers and trap elements at end of blow down.
2. Operational Test: Run system in an automatic mode for a minimum of 120-Operational hours

3.5 HVAC SYSTEM CLEANING

A. The Contractor shall be responsible for the removal of visible surface contaminants and deposits from within the HVAC system as defined herein.

B. The HVAC system includes any interior surface of the facility's air distribution system for conditioned spaces and/or occupied zones. This includes the entire heating, air-conditioning and ventilation system from the points where the air enters the system to the points where the air is discharged from the system. The return air grilles, return air ducts to the air handling unit (AHU), the interior surfaces of the AHU, mixing box, coil compartment, condensate drain pans, dehumidifiers, supply air ducts, fans, fan housing, fan blades, turning vanes, filters, filter housings, reheat coils, and supply diffusers are all considered part of the HVAC system. The HVAC system shall also include other components such as dedicated exhaust and ventilation components and make-up air systems.

C. Prior to the commencement of any cleaning work, the HVAC Subcontractor shall perform a visual inspection of the HVAC system to determine appropriate methods, tools, and equipment required to satisfactorily complete the cleaning. The cleanliness inspection should include air handling units and representative areas of the HVAC system components and ductwork. In HVAC systems that include multiple air handling units, a representative sample of the units should be inspected. The cleanliness inspection shall be conducted without negatively impacting the indoor environment through excessive disruption of settled dust, microbial amplification or other debris.

D. Debris removed during cleaning shall be collected and precautions shall be taken to ensure that debris is not otherwise dispersed outside the HVAC system during the cleaning process.

E. Component Cleaning: Cleaning methods shall be employed such that all HVAC system components must be visibly clean. Upon completion, all components must be returned to those settings recorded just prior to cleaning operations.

F. Air-Volume Control Devices: Dampers and any air-directional mechanical devices inside the HVAC system must have their position marked prior to cleaning and, upon completion, must be restored to their marked position.

G. Rigid fiberglass duct systems shall be resealed in accordance with North American Insulation Manufacturers Association (NAIMA) recommended practices. Only closure techniques that comply with UL Standard 181 or UL Standard 181a are suitable for fiberglass duct system closures.

H. Air distribution devices (registers, grilles & diffusers): The contractor shall clean all air distribution devices.

I. Air handling units, blowers and exhaust fans: The contractor shall insure that supply, return, and exhaust fans and blowers are thoroughly cleaned. Areas to be cleaned include blowers, fan housings, plenums (including ceiling return plenums), scrolls, blades, or vanes, shafts, baffles, dampers and drive assemblies. All visible surface contamination deposits shall be removed. Contractor shall:
   1. Clean all air handling units (AHU) internal surfaces, components and condensate collectors and drains.
   2. Assure that a suitable operative drainage system is in place prior to beginning wash down procedures.
   3. Clean all coils and related components, including evaporator fins.

J. For duct systems, Contractor shall mechanically clean all duct systems to remove all visible contaminants.

K. Mechanical Cleaning Methodology
   1. Source Removal Cleaning Methods: The HVAC system shall be cleaned using source removal mechanical cleaning methods designed to extract contaminants from within the HVAC system and safely remove contaminants from the facility. It is the contractor's responsibility to select source removal methods that will render the HVAC system visibly clean, in accordance with all general requirements. No cleaning method, or combination of methods, shall be used which could potentially damage components of the HVAC system or negatively alter the integrity of the system.
      a. All methods used shall incorporate the use of vacuum collection devices that are operated continuously during cleaning. A vacuum device shall be connected to the downstream end of the section being cleaned through a predetermined opening. The vacuum collection device must be of sufficient power to render all areas being cleaned under negative pressure, such that containment of debris and the protection of the indoor environment are assured.
      b. All vacuum devices exhausting air inside the building shall be equipped with HEPA filters (minimum efficiency), including hand-held vacuums and wet-vacuums.
      c. All vacuum devices exhausting air outside the facility shall be equipped with particulate collection including adequate filtration to contain debris removed from the HVAC system. Such devices shall exhaust in a manner that will not allow contaminants to re-enter the facility.
      d. All methods require mechanical agitation devices to dislodge debris adhered to interior HVAC system surfaces, such that debris may be safely conveyed to vacuum collection devices. Acceptable methods will include those, which will not potentially damage the integrity of the ductwork, nor damage porous surface materials such as liners inside the ductwork or system components.

L. Methods of Cleaning Fibrous Glass Insulated Components
   1. Fibrous glass thermal or acoustical insulation elements present in any equipment or ductwork shall be thoroughly cleaned with HEPA vacuuming equipment, while the HVAC system is under constant negative pressure, and not permitted to get wet in accordance with applicable National Air Duct Cleaners Association (NADCA) and NAIMA standards and recommendations.
   2. Cleaning methods used shall not cause damage to fibrous glass components.

M. Damaged Fibrous Glass Material
   1. Evidence of damage: If there is any evidence of damage, deterioration, delaminating, friable material, mold or fungus growth, or moisture such that fibrous glass materials cannot be restored by cleaning or resurfacing with an acceptable insulation repair coating, they shall be identified for replacement.
   2. Replacement: Contractor shall remediate exposed damaged insulation in air handlers and/or ductwork requiring replacement.
   3. Replacement material: In the event fiberglass materials must be replaced, all materials shall conform to UL 181 and SMACNA.

N. Cleaning of coils
   1. Any cleaning method may be used which will render the coil visibly clean. Coil drain pans shall be subject to non-porous surface cleaning. The drain for the condensate drain pan shall be operational. Cleaning methods shall not cause any appreciable damage to, displacement of, inhibit heat transfer, or erosion of the coil surface or fins, and shall conform to coil manufacturer recommendations when available. Coils shall be thoroughly rinsed with clean water to remove any latent residues.

O. Antimicrobial Agents and Coatings
   1. Antimicrobial agents shall only be applied if active fungal growth is reasonably suspected, or where unacceptable levels of fungal contamination have been verified through testing.
   2. Application of any antimicrobial agents used to control the growth of fungal or bacteriological contaminants shall be performed after the removal of surface deposits and debris.
   3. When used, antimicrobial treatments and coatings shall be applied in strict accordance with the manufacturer's written recommendations and EPA registration listing.
   4. Antimicrobial coatings shall be applied according to the manufacturer's written instructions. Coatings shall be sprayed directly onto interior ductwork surfaces, rather than "fogged" downstream onto surfaces.

P. Cleanliness Verification
   1. General: Verification of HVAC System cleanliness will be determined after mechanical cleaning and before the application of any treatment or introduction of any treatment-related substance to the HVAC system, including biocidal agents and coatings.
   2. Visual Inspection: The HVAC system shall be inspected visually to ensure that no visible contaminants are present.
      a. If no contaminants are evident through visual inspection, the HVAC system shall be considered clean; however, the Commissioner reserves the right to further verify system cleanliness.
      b. If visible contaminants are evident through visual inspection, those portions of the system where contaminants are visible shall be re-cleaned and subjected to re-inspection for cleanliness.
   3. Verification of Coil Cleaning

a. Cleaning must restore the coil pressure drop to within 10 percent of the pressure drop measured when the coil was first installed. If the original pressure drop is not known, the coil will be considered clean only if the coil is free of foreign matter and chemical residue, based on a thorough visual inspection.

Q. Post-Cleaning Report
At the conclusion of the cleaning, the Contractor shall provide a report to the Commissioner indicating the following:
1. Success of the cleaning project, as verified through visual inspection.
2. Areas of the system that were found to be damaged and/or needed repair which were remediated by the Contractor.

3.6 BALANCING INSPECTION

A. Do not proceed with adjusting and final balancing until unsatisfactory conditions have been corrected in a manner approved by the balancing Subcontractor and the Commissioner.

B. Examine the air systems to see that they are free from obstructions. Determine that all dampers, grilles and registers are open, that moving equipment is lubricated, that clean filters are installed, pneumatic and automatic controls are functioning, and perform other inspection and maintenance activities necessary for proper operation of the systems.
1. Examine terminal units, such as variable-air-volume boxes, to verify that they are accessible and their controls are connected and functioning.

C. Examine the hydronic and steam systems to see that they are free from abnormal obstructions, and that all piping, valves and equipment have been properly made fully operational. Determine that all equipment and control systems are performing correctly by functional testing.

3.7 BALANCING AND ADJUSTING - GENERAL REQUIREMENTS

A. Notify the Commissioner when any deficiencies are detected, whether associated with design, installation, or equipment.

B. Balancing Subcontractor shall perform all the procedures and compile all the data for all air, hydronic and steam systems. All standard forms (NEBB, AABC, or SMACNA) approved by the certifying agency (NEBB, AABC or TABB) shall be completed as applicable to the particular project. Missing or incomplete forms shall be justification to reject the balancing report.

C. Data shall include a schematic diagram locating the air inlets, air outlets, variable-air volume boxes, roof-top units, fans, equipment, dampers and regulating devices for air systems, a schematic diagram for location of balancing valves, flow indicators, equipment, and devices for hydronic systems and a schematic diagram for location of equipment, and devices for the steam systems.

D. All instruments used shall be accurately calibrated and maintained in good working order.

E. Balancer shall work with the Temperature Controls Contracting (TCC) Subcontractor to verify that the TCC provided software yields the same flow results as reflected in the final balancing report.

3.8 AIR BALANCING

A. The final adjusting and balancing of air systems shall include the following:
   1. Record and adjust fan rpm to design requirements.
   2. Record motor full load amperes.
   3. Make pitot tube traverse of main supply and return ducts and obtain actual flow rate of fans. Single measurements without traversing the ducts are not acceptable.
   4. Record system static pressure, velocity pressure and total pressure.
   5. Adjust system for design supply, transfer and return airflow rate.
   6. Adjust system for minimum and maximum (economizer) design flow rates of outside air.
   7. Record return air temperatures.
   8. Record entering mix air temperatures.
   9. Record leaving air temperatures.
   10. Adjust all main supply, return, relief, and exhaust air ducts to proper design flow rate.
   11. Adjust each diffuser, grille and register.
   12. Each grille, diffuser and register shall be identified as to location and area on the schematic diagram.
   13. Size, type and manufacturer of diffusers, grilles and registers and all tested equipment shall be identified and listed in the final report. Manufacturer's data on all equipment shall be used to make required calculations for adjusting and balancing. Readings of diffusers, grilles and registers shall include design required and resultant velocity, required and resultant flow rate after adjustments.
   14. All diffusers, grilles and registers shall be adjusted to minimize drafts in all areas.
   15. Dampers shall be permanently marked after air balance is complete so that they can be restored to their correct position, if disturbed later.
   16. Openings in ductwork for pitot tube insertion shall be sealed with snap-in plugs after air balance is complete.

3.9 HYDRONIC SYSTEMS

A. The adjusting and balancing of hydronic systems shall include the following:
   1. Examine water in systems and determine if water has been treated and cleaned.
   2. Check expansion tank to determine that it is not air bound.
   3. Purge all air vents at high points of water systems, check automatic air vents and determine if they are operating properly.
   4. Coordinate with TCC Subcontractor for required cooling and heating temperature controls and corresponding automatic valve operation settings.
   5. Open all normally open valves to full open position. Set automatic valves to full coil flow.
   6. Complete air balance shall have been accomplished before final water balance begins.
   7. Check water pumps for pump rotation and for proper flow rate delivery against manufacturers' pump curves.
   8. Set all balancing valves for required flow delivery at mains and branch mains to cooling and heating elements.
   9. Upon completion of final flow readings and adjustments of balancing valves, mark all settings and record data, so that they can be restored to their correct final "balanced" position, if disturbed later.

10. After required cooling and heating temperature controls and balancing valve operation settings are made, recheck pump flow requirements and readjust system as required.
11. Record pressure drop through coil at set flow rate of coil for full cooling and on full heating. Set pressure drop across bypass valve to match coil pressure drop.
12. Record and check the following items at each cooling and heating element:
    a. Inlet water temperatures and static pressure at connections.
    b. Leaving water temperatures and the pressure drop of each coil.
    c. Flow rate through coil with control valve manually wide open.
13. Record operating suction and discharge pressures of each pump and final total dynamic head and rated amperage versus actual amperage of pump motors.
14. Record entering and leaving water temperatures and flow through all equipment and devices.
15. Check and record all flow rates at all locations in the piping system with flow meters.

END OF SECTION 230593

SECTION 23 07 19 HVAC PIPING INSULATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum and (5) the Contract (City of New York Standard Construction Contract).

1.2 SUMMARY

A. Provide thermal insulation on the piping (HVAC) required on this Project, as needed for a complete and proper installation; product specific requirements are contained here; Common Work requirements, shall be referred to for general requirements. All insulation materials shall be free of asbestos.

B. Section includes:
1. Piping insulation.
2. Insulation jackets.
3. Insulation accessories.
4. Bands, staples, tapes, wires, cements, adhesives, sealers and protective finishes.

C. Related Sections
1. Section 23 05 00 - COMMON WORK RESULTS FOR HVAC
2. Section 23 05 53 - IDENTIFICATION FOR HVAC PIPING AND EQUIPMENT
3. Section 23 21 16 - HYDRONIC PIPING SPECIALTIES
4. Section 23 22 16 - STEAM AND CONDENSATE PIPING SPECIALTIES

1.3 SUBMITTAL PROCEDURES

A. Refer to DDC General Conditions Section 01 33 00 “Submittal Procedures”.

B. Schedule listing items to be insulated, description of insulation and finishing procedures.

1.4 QUALITY ASSURANCE

A. Refer to DDC General Conditions Section 01 40 00 “Quality Requirements”.

B. Installer's Qualifications: Firm with at least three years successful installation experience.

C. Code and Standards
1. Insulation characteristics: Per Sections MC 1204.1 and MC 1204.2 of the 2014 NYC Mechanical Code, pipe insulation installed in buildings shall conform to the requirements of the Energy Conservation Code of New York City, shall be tested in accordance with ASTM E84 or UL 723 per

Section MC 604.3 and shall have a maximum flame spread index of 25 and a smoke developed index not exceeding 450. Insulation installed in an air plenum shall comply with Section MC 602.2.1. Section MC 602.2.1 requires that materials exposed within plenums shall be noncombustible or shall have a flame spread index of not more than 25 and a smoke-developed index of not more than 50 when tested in accordance with ASTM E84 or UL 723 per Section MC 604.3.

a. Hydronic piping shall be insulated to the thickness required by the Energy Conservation Code of New York City and New York City Environmentally Preferable Purchasing (EPP) Minimum Standards for Goods.

2. All insulation material shall be in accordance with the above ASTM E84 requirements or UL 723, using the specimen preparation and mounting procedures of ASTM E2231 per Section MC 604.3.
3. Comply with ASTM, ASHRAE and New York City Energy Conservation Code Standards and New York City Environmentally Preferable Purchasing (EPP) Minimum Standards for Goods.
4. Testing of material shall be in accordance with Section §28-113 of the NYC Administrative Code (reference Section MC 301.5). Whenever the NYC Construction Codes or the Rules of the Department of Buildings requires that material be listed or labeled and material proposed to be used is not so listed or labeled, the use of such material shall be subject to prior approval by the Commissioner and such material shall be used only to the extent set forth in such approval

1.5 TEMPERATURE REQUIREMENT

A. Apply adhesive, sealers, coating, and all other items and accessories at the proper temperature as recommended by the manufacturer. If ambient conditions are not acceptable, provide temporary heat as required for proper installation without any delay to the Project completion.

1.6 COORDINATION

A. Coordinate size and location of supports, hangers, and insulation shields

B. Coordinate clearance requirements with piping installer for insulation application. Establish and maintain clearance requirements for installation of insulation and any field-applied jackets and finishes and for space required for maintenance.

C. Coordinate installation and testing of heat tracing.

PART 2 - PRODUCTS

2.1 MATERIALS AND MANUFACTURERS

A. Manufacturers:
1. Armacell LLC.
2. CertainTeed Corp.
3. Knauf Insulation.
4. Johns Manville
5. The Dow Chemical Company (Building Materials).
6. Owens-Corning Fiberglas Corp. (including Owens Corning Evolution and VaporWick).

7. Pittsburgh Corning Corp.
8. Rubatex Corp.
9. 3M VentureClad.
10. Polyguard Products Inc.
11. Roxul.
12. HITLIN Visionary Industrial Insulation.
13. Or approved equal.

B. Adhesives and Sealants for Insulation: All adhesives and sealants used on interior building insulation shall comply with the South Coast Air Quality Management District (SCAQMD) Rule #1168; VOC limits shall comply with the limits indicated , Indoor Environmental Quality Section, Credit IEQ 4.1. Those limits correspond to an effective date of the SCAQMD Rule #1168 of July 1, 2005, and Rule Amendment date of January 7, 2005.

C. Products shall not contain asbestos, lead, mercury, or mercury compounds.

D. Foam insulation materials shall not use CFC or HCFC agents in the manufacturing process.

E. Pipe Insulation
1. One-piece molded sectional fiber glass insulation made from inorganic glass fibers bonded with a thermosetting resin and shall have a nominal 4-pound density with a thermal conductivity (k) per Table C403.2.1 of the 2016 NYCECC and Tables 6.8.3-1 and 6.8.3-2 of ASHRAE 90.1-2013. Insulations shall have factory-applied all-service jacket (ASJ) and adhesive used to adhere the jacket to the insulation. Insulation shall be suitable for use on piping up to 450oF operating temperature.
2. Preformed polyisocyanurate closed cell insulation with a k-factor of 0.19 at 75oF mean temperature and factory applied Polyvinylidene Chloride (PVDC) vapor retarder film for use in the chilled water supply and return lines and refrigerant lines. The insulation thickness shall provide equivalent thermal resistance as defined in Article 3.04.C. Manufacturers include:
    a. Trymer 2000 with Saran Vapor Retarder by The Dow Chemical Company.
    b. Vapor retarder, Polyguard Zero-Perm.
    c. Johns Manville
    d. Or approved equal.
3. Mineral-Fiber, Pipe Insulation Wicking System: Preformed pipe insulation made from inorganic glass fibers bonded with a thermosetting resin with absorbent cloth factory applied to the entire inside surface of preformed pipe insulation and extended through the longitudinal joint to outside surface of insulation under insulation jacket. Factory apply a white, polymer, vapor-retarder jacket with self-sealing adhesive tape seam and evaporation holes running continuously along the longitudinal seam, exposing the absorbent cloth. This type of wicking insulation shall be applied inside as an alternate to the cold piping (chilled water supply and return, refrigerant) systems. Manufacturers include:
    a. Knauf PermaWick Pipe Insulation
    b. Owens Corning VaporWick Pipe Insulation.
    c. Johns Manville.
    d. Or approved equal.
4. Fiber Free Elastomeric Foam: closed-cell material having a thermal conductivity of 0.25 at 75°F mean temperature.
5. Mineral Wool High Temperature Insulation: inorganic fibers derived from basalt volcanic rock with a thermosetting resin binder rated up to 1200ºF in accordance with ASTM C447. Maximum flame spread rating shall be 5 and smoke developed rating of 0 when tested in accordance with ASTM E84,

UL723, CAN/ULC-S102-M. Mineral wool shall be rated as non-combustible in accordance with ASTM E136 and CAN4-S114-M. Mineral wool shall be fungi resistant in accordance with ASTM C1338. Mineral wool water vapor sorption shall be less than 1% by weight, less than 0.02% by volume at 120ºF and 95% RH in accordance with ASTM C1104. Manufacturers include:

a. Johns Manville MinWool-1200 Pipe.
b. Roxul ProRox PS960NA (formerly known as Techton 1200).
c. The Dow Chemical Company
d. Or approved equal

6. Asbestos free rigid hydrous calcium silicate block, minimum 15-pound density insulation, K of 0.50 at 300°F per ASTM C533.

F. Jackets

1. Factory-applied: ASJ: White, kraft-paper, fiberglass-reinforced scrim with aluminum-foil backing. ASJ-SSL: ASJ with self-sealing, pressure-sensitive, acrylic-based adhesive covered by a removable protective strip. FSK Jacket: Aluminum-foil, fiberglass-reinforced scrim with kraft-paper backing. PVDC-SSL Jacket: PVDC jacket with a self-sealing, pressure-sensitive, acrylic-based adhesive covered by a removable protective strip. For cold water pipe insulation, the jackets shall be the vapor barrier type, ASJ, PVDC, or polyester aluminum products. Manufacturers include:
   a. Zero-Perm.
   b. 3M Insulation
   c. Knauf
   d. Or approved equal.
2. PVC Plastic: One-piece molded type fitting covers and jacketing material, gloss white. Connections: Tacks, pressure sensitive color matching vinyl tape. PVC Plastic Manufacturers include:
   a. Zeston.
   b. Johns Manville.
   c. Knauf.
   d. Or approved equal.
3. For indoor pipe insulation applications, vapor barrier jacket for insulation shall be a laminated five-ply self-adhesive material, high puncture and tear resistant; zero permeability; manufactured with mold inhibitors. Per Section C403.2.10.1 of the 2016 NYCECC, adhesive type materials are not permitted for piping insulation exposed to weather. For outdoor pipe insulation applications, jackets for insulation shall be made of 0.016" aluminum or stainless steel held with friction type, Z-locks, 12” apart. Per Section 6.4.4.1.1 of ASHRAE 90.1-13, insulation exposed to weather shall be suitable for outdoor service, e.g., protected by aluminum or sheet metal cover. Cellular foam insulation shall be protected as above or painted with a coating that is water retardant and provides shielding from solar radiation that can cause degradation of the material. Vapor Barrier Jacket Manufacturers include:
   a. Alumaguard Lite.
   b. Alumaguard “All Weather” LT.
   c. VentureClad 1577CW.
   d. VentureClad 1577CW-E.
   e. Thermax Jacketing.
   f. Or approved equal.

G. Insulation and accessories for valves, fittings, flanges etc. shall include the following:

1. One-pound density fiberglass blanket.
2. Segments of pipe insulation.
3. Pre-molded fiberglass fittings.

4. No. 20 gage galvanized steel or annealed wire.
5. Insulating cement.
6. In lieu of using coated pre-molded fittings for insulating fittings, valves etc., premolded 20-mil thick, high impact ultraviolet-resistant one-piece PVC fitting covers and precut Hi-Lo-Temp insulation inserts are acceptable. For chilled water pipes and refrigerant pipes/tubing, the use of prefabricated insulation for valves, fittings, flanges etc. is acceptable. For cold piping systems the use of the wicking type prefabricated insulation for valves, fittings, flanges etc. is acceptable.
7. Manufacturers for pre-molded, prefabricated insulation include the following.
   a. Zeston
   b. Johns Manville
   c. The Dow Chemical Company
   d. The Owens Corning
   e. Or approved equal.

H. Bands, staples, tapes, wires, cements, adhesives, sealers and protective finishes: As specified herein or as recommended by insulation manufacturer for proper uses on piping insulations.

PART 3 - EXECUTION

3.1 EXECUTION REQUIREMENTS

A. Refer to DDC General Conditions for execution requirements.

3.2 EXAMINATION

A. Before applying the insulation, all tests should have been completed acceptable to the Commissioner. However, thermal insulation can be applied to pipes prior to these tests providing that all fittings are left bare to permit detection and possible leaks.

3.3 SUPPLEMENTAL INSTALLATION

A. Install insulation on pipe systems subsequent to installation of heat tracing, painting, testing, and acceptance of tests.

B. Install insulation materials with smooth and even surfaces. Insulate each continuous run of piping with full-length units of insulation, with single cut piece to complete run. Do not use cut pieces or scraps abutting each other.

C. Clean and dry pipe surfaces prior to insulating. Butt insulation joints firmly together to ensure complete and tight fit over surfaces to be covered.

D. Maintain integrity of vapor-barrier jackets on pipe insulation and protect to prevent puncture or other damage.

E. Valves shall be insulated up to packing unit.

F. Fire Seal Application: Where pipes pass through fire walls, fire partitions, fire rated pipe chase walls or floors above grade, insulation shall pass through and a UL classified assembly shall be provided.

G. Extend piping insulation without interruption through walls, floors and similar piping penetrations, except where otherwise indicated.

H. The temperature of the jacket shall not exceed 200°F.
   1. Paper laminated jackets shall be permanently treated to retain the flame spread and smoke developed rating. Chemicals used for treating paper jacket laminates shall not be water-soluble and shall be unaffected by water and humidity.
   2. Fiberglass insulation joints shall be sealed with butt strips that are compatible with the required facing. Stapling shall not be required to complete the closure. Manufacturer's data regarding thickness constraints in relation to operating temperature shall be followed. On cold systems, vapor barrier shall be provided. All penetrations and exposed ends of insulation shall be sealed with mold resistant vapor barrier mastic.

I. Insulation on all cold surfaces shall be applied with a continuous, unbroken vapor seal. Hangers, supports, anchors etc., that are secured directly to cold surfaces must be adequately insulated and vapor sealed to prevent condensation.

J. All surface finishes are to be extended to protect all surfaces, ends and raw edges of insulation.

K. General valves, fittings, etc. shall be insulated as follows:
   1. For pipe sizes smaller than 4" wrap firmly under a minimum of a 3:1 compression, with 1-pound density fiberglass blanket, to a thickness equal to adjoining insulation. Secure with No. 20-gage galvanized or annealed steel wire. Finish with a smooth coat of insulating cement.
   2. For pipe sizes 4" and larger, fit segments of pipe insulation equal in thickness to adjoining insulation and secure with No 20-gage galvanized or annealed steel wire. Finish with a smooth coat of insulating cement.
   3. In lieu of the foregoing methods, the use of pre-molded fiberglass fittings of the same thickness of adjoining pipe insulation will be accepted. Finish with a smooth coat of insulating cement.
   4. In lieu of the foregoing methods, the use of preformed PVC fitting covers with factory precut Hi-Lo Temp insulation insert of the same thickness as adjoining pipe insulation will be accepted. Valves, fittings, etc. shall be insulated by applying the proper factory precut Hi-Lo Temp insulation insert to the pipe fitting, valve, etc. The ends of the Hi-Lo Temp insulation insert shall be tucked snugly into the throat of the fitting, valve etc. and the edges adjacent to the pipe covering tufted and tucked in, fully insulating the pipe fitting, valve, etc. Vapor barrier mastic compatible with the PVC shall be applied around the edges of the adjoining pipe insulation and on the fitting cover throat overlap seam. The PVC fitting cover shall then be applied and shall be secured with pressure sensitive tape along the circumferential edges. The tape shall extend over the adjacent pipe insulation and have an overlap on itself at least 2" on the downward side.

L. Cold Piping: Install the fiberglass, polyisocyanurate closed cell or wicking type insulation with factory supplied vapor barrier jacket. The use of staples on vapor barrier jacketed insulation is not permitted. The use of self-adhesive vapor barrier jacket on cold water piping systems will be accepted for interior applications. The use of elastomeric closed cell fiber free foam is also acceptable.

M. Hot Piping: Install the fiberglass insulation with factory supplied jacket. Butt all joints firmly together and smoothly secure all jacket laps and joints strips with lap adhesive. Valves, fittings, etc. shall be insulated as specified in the Article 3.02.L.

N. Insulation and Protection at Points of Support
1. Install inserts made from rigid calcium silicate pipe insulation at all points of support. Inserts shall be not less than 12" long and of thickness equal to adjoining insulation. A jacket shall be installed over the insert with longitudinal laps and butt strips for circumferential joints smoothly secured with insulation adhesive. Jacket shall provide vapor barrier where required.
2. Install galvanized steel shields between supports and inserts. Shields shall be formed to fit the insulation and shall extend up to the centerline of the pipe and of the length specified for the inserts. Supports shall not pierce the insulation and all vapor barriers shall be unbroken and continuous.

3.4 PROTECTION AND REPLACEMENT

A. Replace damaged insulation during construction that cannot be repaired satisfactorily, including units with vapor barrier damage and moisture saturated units.

B. Protection: Insulation worker shall advise Contractor of required protection for insulation work during remainder of construction period, to avoid damage and deterioration.

3.5 SCHEDULE OF PIPE INSULATION

A. The following piping systems shall be insulated:
1. All steam and condensate piping throughout and steam header drips.
2. Cold water, make-up water, supply and return piping for hot, chilled, refrigerant and dual temperature water systems. Bonnets of valves in hot, chilled and dual temperature water piping shall also be insulated.
3. Condensate drain line from HVAC equipment drain port.

B. Required Thickness (per Table C403.2.1 of the 2016 NYCECC and Tables 6.8.3-1 and 6.8.3-2 of ASHRAE 90.1-2013)

Fluid Operating Temperature Range and Usage (ºF)	Insulation Conductivity BTUin/hrft²ºF	Insulation Conductivity Mean Rating Temperature ºF	Nom Dia <1”	Nom Dia 1” to < 1.5”	Nom Dia 1.5” to < 4”	Nom Dia 4” to 8”	Nom Dia <= 8”
201-250	0.27-0.30	150	2.5	2.5	2.5	3.0	3.0
141-200	0.25-0.29	125	1.5	1.5	2.0	2.0	2.0
105-140**	0.22-0.28	100	1.0	1.0	1.5	1.5	1.5
40-60**	0.21-0.27	75	0.5	0.5	1.0	1.0	1.0
<40	0.20-0.26	50	0.5	1.0	1.0	1.0	1.5

C. For piping smaller than 1.5” and located in partitions within conditioned spaces, reduction of the above thicknesses by 1” shall be permitted (before the thickness adjustment required for insulation having a conductivity outside the stated conductivity range) but not to a thickness less than 1”.

END OF SECTION 23 07 19

SECTION 23 08 00 - COMMISSIONING FOR HVAC 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. Commissioning consists of systematically documenting that specified components and systems have been installed and started up properly and then functionally tested to verify and document proper operation through all sequences of operation and conditions. In addition, instruction of The City of New York's Operations Personnel will be verified and final project O&M Documents will be reviewed for completeness.

1.3 QUALITY ASSURANCE

A. Reference Standards:
   1. OSHA Part 1910; Subpart S. 1910.308.
   2. American National Standards Institute: ANSI
   3. American Society for Testing and Materials: ASTM
   4. National Electrical Manufacturers Association: NEMA
   5. National Fire Protection Association: NFPA
   6. American Society of Heating, Refrigerating and Air-Conditioning Engineers: ASHRAE

B. All inspections and tests shall use the following references.
   1. Contract Specifications.
   2. Contract Drawings.
   3. Manufacturer's instruction manuals and approved shop drawings for applicable equipment.

PART 2 - PART 2 – PRODUCTS

2.1 EQUIPMENT AND INSTRUMENTS for Cx process

A. The Contractor shall furnish all tools, instruments, laptops, calibrated meters, software programs, personnel, and services required to perform the commissioning process. This includes providing the connection to systems to be tested, temporary alterations for test purposes, calibrations, operation of the test equipment & instrumentation and generating test results (as required), and the restoration of equipment/systems to original operating condition. A list of all tools and equipment to be used during commissioning shall be submitted to the CxA for approval. The Contractor shall furnish necessary utilities for the commissioning process.

B. 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. Proprietary test equipment (and software) shall become the property of The City of New York upon completion of the commissioning process.

2.2 COMMISSIONING DOCUMENTATION

A. All documentation for the commissioning process shall be entered into the CxA's commissioning project progress tracking software tool. The Contractor will be allowed web-based access to the software upon request. Additionally, the Contractor may download the CxA's mobile application to a tablet format. The mobile application is available in Apple, Android, and Windows format. There is no fee associated with the software or the mobile application. The Contractor shall allow sufficient time to familiarize himself with the operation of the software.

PART 3 - EXECUTION

3.1 GENERAL

A. The Contractor shall complete all phases of work so the systems can be started, tested, balanced, and acceptance procedures undertaken. This includes the complete installation of all equipment, materials, pipe, duct, wire, insulation, controls, etc., per the contract documents and related directives, clarifications, and change orders.

3.2 PARTICIPATION IN ACCEPTANCE PROCEDURES

A. The Contractor shall provide skilled technicians to startup and debug all systems within the project contracted work. These same technicians shall be made available to assist the Commissioning Authority in completing the commissioning program. Work schedules, time required for testing, etc., shall be requested by the Commissioning Authority and coordinated by the Contractor. The Contractor shall ensure that the qualified technician(s) are available and present during the agreed upon schedules and of sufficient duration to complete the necessary tests, adjustments, and/or problem resolutions.

B. System performance problems and discrepancies may require additional technician time, Commissioning Authority time, reconstruction of systems, and/or replacement of system components. At no additional cost to The City of New York, the additional technician time shall be made available for subsequent commissioning periods until the required system performance is obtained.

C. The Commissioning Authority reserves the right to question the appropriateness and qualifications of the technicians relative to each item of equipment, system, and/or sub-system. Qualifications of technicians shall include expert knowledge relative to the specific equipment involved and a willingness to work with the Commissioning Authority. The Contractor shall provide adequate documentation and tools to start-up and test the equipment, system, and/or sub-system.

3.3 DEFICIENCY RESOLUTION

A. In some systems, inaccurate adjustments, misapplied equipment, and/or deficient performance under varying loads will result in additional work being required to commission the systems. This work shall be completed under the direction of The City of New York, with input from the Contractor, equipment manufacturer, and Commissioning Authority. Whereas all members shall have input and the opportunity to discuss, debate, and work out problems, The Commissioner shall have final jurisdiction over any additional work done to achieve performance.

B. Corrective work shall be completed in a timely fashion to permit the completion of the commissioning process. Experimentation to demonstrate system performance may be permitted. If the Commissioning Authority deems the experimentation work to be ineffective or untimely as it relates to the commissioning process, the Commissioning Authority shall notify The Commissioner, indicating the nature of the problem, expected steps to be taken, and suggested deadline(s) for completion of activities. If the deadline(s) pass without resolution of the problem, The Commissioner reserves the right to obtain supplementary services and/or equipment to resolve the problem. Contractor shall provide supplementary services incurred to solve problems at no additional cost to the City of New York.

3.4 ADDITIONAL COMMISSIONING

A. Additional commissioning activities may be required after system adjustments, replacements, etc., are completed. The Contractor, suppliers, and Commissioning Authority shall complete this work at no additional cost to the City of New York.

3.5 SEASONAL COMMISSIONING

A. Seasonal commissioning pertains to testing under full load conditions during peak heating and peak cooling seasons, as well as part load conditions in the spring and fall. Initial commissioning shall be done as soon as contract work is completed, regardless of season. Subsequent commissioning may be undertaken at any time thereafter to ascertain adequate performance during the different seasons.

3.6 SUSTAINING SYSTEM READINESS

A. The Commissioning Authority will prepare and issue to the Contractor Pre-Functional Checklist (PFC) forms for each system or major piece of equipment to be commissioned. Pre-Functional Checklists are important to ensure that the equipment and systems are installed and operational. It ensures that Functional Performance and Integrated Systems Testing may proceed without unnecessary delays. Each piece of equipment is to receive full pre-functional checkout by the contractor. No sampling strategies are to be used. The Pre-Functional Checklists for all equipment related to any given system must be successfully completed prior to formal Functional Performance and Integrated Systems Testing of the system.

B. The Commissioning Authority will monitor and track the completion of the Pre-Functional Checklist forms.

C. The Contractor shall complete the Pre-Functional Checklists, provided by the Commissioning Authority, as follows:

1. Pre-Functional Checklists should be maintained in a binder(s) or electronically at the Contractor's project site office and are subject to review for comparison between the completion level of the Checklists and the status of the work during site observation visits by the Commissioning Authority.
2. Complete Section 1 "Equipment Delivery" of the Pre-Functional Checklist after equipment delivery to the site.
3. Complete Section 2 "Equipment Installation" of the Pre-Functional Checklist after the equipment installation is complete.
4. Complete Section 3 "Equipment Start-up" of the Pre-Functional Checklist after the equipment has been successfully started. The Contractor is to forward copies of all manufacturer's start-up forms and reports to the Commissioning Authority.
5. Complete Section 4 "BAS/Power Monitoring/Lighting Control Integration" of the Pre-Functional Checklist after the equipment and systems control configuration and integration process has been completed.
6. Complete Section 5 "Notification for Testing" of the Pre-Functional Checklist after the equipment if fully operational and ready for Functional Performance and Integrated Systems Testing.
7. Completed and signed Pre-Functional Checklists are a pre-requisite for commencing Functional Performance and Integrated Systems Testing. If field observation indicates a significant deviation from actual installation conditions, all checklists will be returned to the Contractor for revision and resubmission at no additional cost to the City.
8. Only individuals that have direct knowledge and witnessed that a line item task on the Pre-Functional Checklist was actually performed shall initial or check off that item.

D. The Contractor shall clearly list any outstanding items from the Pre-Functional Checklists and/or manufacturer start-up reports and checklists that were not completed successfully in the Comments section of the applicable Pre-Functional Checklist. The Commissioning Authority will review any items/issues listed and will address them through discussion with the Commissioner and Contractor prior to proceeding with Functional Performance and Integrated Systems Testing.

E. The Contractor shall develop detailed start-up plans for all equipment. These plans shall be reviewed by the Commissioner and the Commissioning Authority for completeness and verification that the manufacturer-recommended procedures have been completed.
1. The Contractor responsible for the installation and start-up of the equipment is responsible for developing the start-up plan by combining the Pre-Functional Checklist with the manufacturer's detailed start-up and checkout procedures and any required quality assurance testing.
2. The Contractor shall maintain an updated and annotated copy of the start-up plan that shall be accessible for review by the Commissioner and the Commissioning Authority at periodic intervals.
3. The completed start-up procedures shall be provided along with the completed Pre-Functional Checklists to the Commissioning Authority prior to the Contractor's certification that the systems are ready for Functional Performance and Integrated Systems Testing.

3.7 FUNCTIONAL PERFORMANCE TESTING

A. The CxA will provide to the Contractor functional performance tests (FPTs). The Contractor shall review the test procedures, so that proper preparation may occur. The Contractor shall execute the FPT document and prove to The Commissioner's Representative and the Cx Authority that the performance of the Mechanical Systems achieves the performance level identified. Refer to all other specification sections for other systems that may need to be tested. The following systems are to be commissioned but not limited to:

1. Print Shop AHU with New Motors
2. New Toilet Exhaust Fans
3. BMS System for Existing Marriage Bureau BMS
4. New BMS System For Print Shop AHU

B. Detailed testing shall be performed on all installed equipment and systems to ensure that operation and performance conform to contract documents. All tests shall be witnessed by the Commissioning Authority. The following testing is required as part of the commissioning process:
   1. Verification tests are comprised of a full range of checks and tests to determine that all components, equipment, systems, and interfaces between systems operate in accordance with contract documents. This includes all operating modes, interlocks, control responses, and specific responses to abnormal or emergency conditions.
   2. Functional performance tests (FPT) shall determine if the HVAC system is providing the required cooling and heating services in accordance with the finalized design intent. These tests shall also determine the installed capacity of the cooling and heating equipment, and the individual heat transfer components.

3.8 ROLES AND RESPONSIBILITIES

A. Contractor
   1. Assure acceptable representation, with the means and authority to prepare and coordinate execution of the HVAC system commissioning program as described in the contract documents.
   2. Attend commissioning meetings scheduled by the CxA.
   3. Coordinate inclusion of commissioning activities in the construction schedule.
   4. Complete Pre-Functional Checklists and manufacturer's pre-startup checklists prior to scheduling pre-testing of the HVAC system.
   5. Issue a notice that HVAC pre-testing has been scheduled.
   6. Monitor, respond, and remedy deficiencies identified in the Corrective Issue Reports (CIRs) distributed by the CxA in order to expedite corrective actions necessary to achieve design intent.
   7. Facilitate resolution of deficiencies that were identified by observations or performance testing.
   8. Participate in the Functional Performance Tests as required to achieve design intent.
   9. Participate in O&M Instruction as required by project specifications.
   10. Include requirements for submittal data, O&M data, and instruction in each purchase order or sub-contract written.
   11. Ensure cooperation and participation of the trades such as sheet metal, piping, refrigeration, water treatment, and TAB.
   12. Ensure participation of major equipment manufacturers in appropriate instruction and testing activities.
   13. Attend Construction Phase coordination meeting scheduled by the Commissioning Authority.
   14. Assist the Commissioning Authority in all verification and functional performance tests.
   15. Prepare preliminary schedule and include the following tasks that will be executed: mechanical system orientation and inspections, O&M manual submission, instruction sessions, pipe and duct system testing, flushing and cleaning, equipment start-up, TAB, and task completion for use by the Commissioning Authority. Update schedule as appropriate throughout the construction period.
   16. Attend initial instruction session.
   17. Conduct HVAC system orientation and inspection at the equipment placement completion stage.
   18. Update drawings to the record condition to date, and review with the Commissioning Authority.
   19. Gather O&M data on all equipment and assemble in binders as required by DDC General Conditions.

20. Notify the Commissioning Authority a minimum of two weeks in advance, so that witnessing equipment and system start-up and testing can begin.
21. Notify the Commissioning Authority a minimum of two weeks in advance, of the time for start of the TAB work. Attend the initial TAB meeting for review of the TAB procedures.
22. Participate in, and schedule vendors to participate in the instruction sessions.
23. Provide written notification to the Commissioning Authority that the following work has been completed in accordance with the contract documents, and that the equipment, systems, and sub-systems are operating as required.
    a. HVAC equipment including all fans, air handling units, dehumidification units, ductwork, dampers, terminals, and all contracted equipment.
    b. Refrigeration equipment, pumping systems and heat rejection equipment.
    c. Fire stopping in the fire rated construction, including fire and smoke damper installation, caulking, gasketing and sealing of smoke barriers.
    d. Dedicated smoke control systems including stairway pressurization.
    e. Non-dedicated systems using the air handling units for smoke control.
    f. Fire detection and smoke detection devices furnished under other divisions of this specification as they affect the operation of the smoke control systems.
    g. Building control systems that control mechanical equipment and smoke control systems are functioning.
    h. Provide a complete set of as-built records to the Commissioning Authority.
24. Submit the TAB procedures to the Commissioning Authority and Commissioner for review and acceptance.
25. Attend the TAB review meeting scheduled by the Commissioning Authority. Be prepared to discuss the procedures that shall be followed in testing, adjusting and balancing the HVAC system.
26. Participate in instruction sessions.
27. At the completion of the TAB work, and submittal of final TAB report, notify the CxA.
28. Participate in verification of the TAB report, which will consist of repeating any selected measurement contained in the TAB report where required by the Commissioning Authority for verification or diagnostic purposes.
29. Review design for controllability with respect to selected manufacturer's equipment;
    a. Verify proper hardware specifications exist for functional performance required by DDC General Requirements, specifications, and sequence of operation.
    b. Verify proper safeties and interlocks are included in design.
    c. Verify proper sizing of control valves and actuators based on design pressure drops. Verify control valve authority to control coil properly.
    d. Verify proper sizing of control dampers. Verify damper authority to control air stream. Verify proper damper positioning for mixing to prevent stratification. Verify actuator vs. damper sections for smooth operation.
    e. Verify proper selection of sensor ranges.
    f. Clarify all questions of operation.
30. Attend initial commissioning coordination meeting scheduled by the CxA.
31. Provide the following submittals to the Commissioning Authority;
    a. Hardware and software submittals.
    b. Control panel construction shop drawings.
    c. Narrative description of each control sequence for each piece of equipment controlled.
    d. Diagrams showing all control points, sensor locations, point names, actuators, controllers and, where necessary, points of access, superimposed on diagrams of the physical equipment.
    e. Logic diagrams showing the logic flow of the system.

f. A list of all control points, including analog inputs, analog outputs, digital inputs, and digital outputs. Include the values of all parameters for each system point. Provide a separate list for each standalone control unit.
g. A complete control language program listing including all software routines employed in operating the control system. Also provide a program write-up, organized in the same manner as the control software. This narrative shall describe the logic flow of the software and the functions of each routine and sub-routine. It should also explain individual math or logic operations that are not clear from reading the software listing.
h. Hardware operation and maintenance manuals.
i. Application software and project applications code manuals.

32. Verify proper installation and performance of controls / BAS, hardware, and software provided by other trades.
33. Integrate installation and programming schedule with construction and commissioning schedules.
34. Provide thorough instruction to operating personnel on hardware operations and programming, and the application program for the system.
35. Demonstrate system performance to Commissioning Authority including all modes of system operation (i.e. normal, abnormal, emergency, etc.).
36. Provide control system technician for use during system verification and functional performance testing.
37. Provide system modifications as required.
38. Provide support and coordination with TAB scopes of work. Provide all devices, such as portable operator's terminals, for TAB use in completing TAB procedures.
39. Additional trend logs may be required to facilitate the commissioning process.

3.9 STARTUP

A. The Contractor shall follow the start-up and initial checkout procedures listed in this specification and in DDC General Conditions. Division 23 has start-up responsibility and is required to complete systems and sub-systems so that they are fully functional and meet the design objectives of the Contract Documents. The commissioning procedures and functional testing do not relieve, lessen this responsibility, or shift that responsibility partially to the Commissioning Agent or The City of New York.

B. Functional testing is intended to begin upon completion of a system. Functional testing may proceed prior to the completion of systems, or sub-systems at the discretion of the CxA and the Contractor. Beginning system testing before full completion does not relieve the Contractor from fully completing the system, including all Pre-Functional Checklists as soon as possible.

3.10 COMMISSIONING STATUS TRACKING

A. The Contractor shall verify that the Tag designation as well as the number (count) of each unit listed is correct against those contained within the initial Contract Documents to ensure that the Contractor's Bid documents contain all of the equipment required to be commissioned.

END OF SECTION 23 08 00

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SECTION 23 09 00 - INSTRUMENTATION AND CONTROL FOR HVAC

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum and (5) the Contract [City of New York Standard Construction Contract].

1.2 SUMMARY

A. This Section includes control equipment for HVAC systems and components, including control components for terminal heating and cooling units not supplied with factory-wired controls.

B. Related Sections include the following:
   1. Section 23 05 19 METERS AND GAGES FOR HVAC PIPING
   2. Section 23 09 93 SEQUENCE OF OPERATIONS FOR HVAC CONTROLS

1.3 SUBMITTAL PROCEDURES

A. Refer to DDC General Conditions Section 01 33 00 “Submittal Procedures” for all submittals.

1.4 QUALITY ASSURANCE

A. Refer to DDC General Conditions Section 01 40 00 “Quality Requirements”.

B. Installer Qualifications: Automatic control system manufacturer's authorized representative who is trained for installation of system components required for this Project per DDC Special Experience requirements.

C. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100.

D. Comply with ASHRAE 135 for Direct Digital Control system components.

1.5 DEFINITIONS

A. DDC: Direct digital control.

B. I/O: Input/output.

C. MS/TP: Master slave/token passing.

D. PC: Personal computer.

E. PID: Proportional plus integral plus derivative.

F. RTD: Resistance temperature detector.

1.6 SYSTEM PERFORMANCE

A. Comply with the following performance requirements:
   1. Graphic Display: Display graphic with minimum 20 dynamic points with current data within 10 seconds.
   2. Graphic Refresh: Update graphic with minimum 20 dynamic points with current data within 8 seconds.
   3. Object Command: Reaction time of less than two seconds between operator command of a binary object and device reaction.
   4. Object Scan: Transmit change of state and change of analog values to control units or workstation within six seconds.
   5. Alarm Response Time: Annunciate alarm at workstation within 45 seconds. Multiple workstations must receive alarms within five seconds of each other.
   6. Program Execution Frequency: Run capability of applications as often as five seconds, but selected consistent with mechanical process under control.
   7. Performance: Programmable controllers shall execute Direct digital control PID control loops, and scan and update process values and outputs at least once per second.
   8. Reporting Accuracy and Stability of Control: Report values and maintain measured variables within tolerances as follows:
      a. Water Temperature: Plus or minus 1 deg F
      b. Water Flow: Plus or minus 5 percent of full scale.
      c. Water Pressure: Plus or minus 2 percent of full scale.
      d. Space Temperature: Plus or minus 1 deg F
      e. Ducted Air Temperature: Plus or minus 1 deg F
      f. Outside Air Temperature: Plus or minus 2 deg F
      g. Temperature Differential: Plus or minus 0.25 deg F
      h. Relative Humidity: Plus or minus 5 percent.
      i. Airflow (Measuring Stations): Plus or minus 5 percent of full scale.
      j. Airflow (Terminal): Plus or minus 10 percent of full scale.
      k. Air Pressure (Ducts): Plus or minus 0.1-inch wg
      l. Electrical: Plus or minus 5 percent of reading.

1.7 SEQUENCE OF OPERATION

A. Refer to 23 09 93 for Sequence of Operations.

1.8 ACTION SUBMITTALS

A. Product Data: For each type of product include the following:

1. Construction details, material descriptions, dimensions of individual components and profiles, and finishes.
2. Operating characteristics, electrical characteristics, and furnished accessories indicating process operating range, accuracy over range, control signal over range, default control signal with loss of power, calibration data specific to each unique application, electrical power requirements, and limitations of ambient operating environment, including temperature and humidity.
3. Product description with complete technical data, performance curves, and product specification sheets.
4. Installation, operation and maintenance instructions including factors effecting performance.
5. Bill of materials of indicating quantity, manufacturer, and extended model number for each unique product.
    a. Workstations.
    b. Servers.
    c. Printers.
    d. Gateways.
    e. Routers.
    f. Protocol analyzers.
    g. Direct digital control controllers.
    h. Enclosures.
    i. Electrical power devices.
    j. UPS units.
    k. Accessories.
    l. Instruments.
    m. Control dampers and actuators.
    n. Control valves and actuators.
6. When manufacturer's product datasheets apply to a product series rather than a specific product model, clearly indicate and highlight only applicable information.
7. Each submitted piece of product literature shall clearly cross reference specification and drawings that submittal is to cover.

B. Software Submittal:
1. Cross-referenced listing of software to be loaded on each operator workstation, server, gateway, and Direct Digital Control controller.
2. Description and technical data of all software provided, and cross-referenced to products in which software will be installed.
3. Operating system software, operator interface and programming software, color graphic software, Direct Digital Control controller software, maintenance management software, and third-party software.
4. Include a flow diagram and an outline of each subroutine that indicates each program variable name and units of measure.
5. Listing and description of each engineering equation used with reference source.
6. Listing and description of each constant used in engineering equations and a reference source to prove origin of each constant.
7. Description of operator interface to alphanumeric and graphic programming.
8. Description of each network communication protocol.
9. Description of system database, including all data included in database, database capacity and limitations to expand database.

10. Description of each application program and device drivers to be generated, including specific information on data acquisition and control strategies showing their relationship to system timing, speed, processing burden and system throughout.
11. Controlled Systems: Instrumentation list with element name, type of device, manufacturer, model number, and product data. Include written description of sequence of operation including schematic diagram.

C. Shop Drawings:
1. General Requirements:
   a. Include cover drawing with Project name, location, Commissioner, Contractor and issue date with each Shop Drawings submission.
   b. Include a drawing index sheet listing each drawing number and title that matches information in each title block.
   c. Drawings Size: 11x17.
2. Include plans, elevations, sections, and mounting details where applicable.
3. Include details of product assemblies. Indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
4. Detail means of vibration isolation and show attachments to rotating equipment.
5. Plan Drawings indicating the following:
   a. Screened backgrounds of walls, structural grid lines, HVAC equipment, ductwork, and piping.
   b. Room names and numbers with coordinated placement to avoid interference with control products indicated.
   c. Each desktop workstation, server, gateway, router, Direct Digital Control controller, control panel instrument connecting to Direct Digital Control controller, and damper and valve connecting to Direct Digital Control controller, if included in Project.
   d. Exact placement of products in rooms, ducts, and piping to reflect proposed installed condition.
   e. Network communication cable and raceway routing.
   f. Proposed routing of wiring, cabling, conduit, and tubing, coordinated with building services for review before installation.
6. Schematic drawings for each controlled HVAC system indicating the following:
   a. I/O points labeled with point names shown. Indicate instrument range, normal operating set points, and alarm set points. Indicate fail position of each damper and valve, if included in Project.
   b. I/O listed in table format showing point name, type of device, manufacturer, model number, and cross-reference to product data sheet number.
   c. A graphic showing location of control I/O in proper relationship to HVAC system.
   d. Wiring diagram with each I/O point having a unique identification and indicating labels for all wiring terminals.
   e. Unique identification of each I/O that shall be consistently used between different drawings showing same point.
   f. Elementary wiring diagrams of controls for HVAC equipment motor circuits including interlocks, switches, relays, and interface to Direct Digital Control controllers.
   g. Narrative sequence of operation.
   h. Graphic sequence of operation, showing all inputs and output logical blocks.
7. Control panel drawings indicating the following:
   a. Panel dimensions, materials, size, and location of field cable, raceways, and tubing connections.

b. Interior subpanel layout, drawn to scale and showing all internal components, cabling and wiring raceways, nameplates, and allocated spare space.
c. Front, rear, and side elevations and nameplate legend.
d. Unique drawing for each panel.

8. Direct Digital Control system network riser diagram indicating the following:
   a. Each device connected to network with unique identification for each.
   b. Interconnection of each different network in Direct Digital Control system.
   c. For each network, indicate communication protocol, speed and physical means of interconnecting network devices, such as copper cable type, or optical fiber cable type. Indicate raceway type and size for each.
   d. Each network port for connection of an operator workstation or other type of operator interface with unique identification for each.
9. Direct Digital Control system electrical power riser diagram indicating the following:
   a. Each point of connection to field power with requirements (volts/phase//hertz/amperes/connection type) listed for each.
   b. Each control power supply including, as applicable, transformers, power-line conditioners, transient voltage suppression and high filter noise units, DC power supplies, and UPS units with unique identification for each.
   c. Each product requiring power with requirements (volts/phase//hertz/amperes/connection type) listed for each.
   d. Power wiring type and size, race type, and size for each.
10. Monitoring and control signal diagrams indicating the following:
    a. Control signal cable and wiring between controllers and I/O.
    b. Point-to-point schematic wiring diagrams for each product.
    c. Control signal tubing to sensors, switches, and transmitters.
    d. Process signal tubing to sensors, switches, and transmitters.
11. Color graphics indicating the following:
    a. Itemized list of color graphic displays to be provided.
    b. For each display screen to be provided, a true color copy showing layout of pictures, graphics, and data displayed.
    c. Intended operator access between related hierarchical display screens.

D. System Description:
   1. Full description of Direct Digital Control system architecture, network configuration, operator interfaces and peripherals, servers, controller types and applications, gateways, routers and other network devices, and power supplies.
   2. Complete listing and description of each report, log and trend for format and timing, and events which initiate generation.
   3. System and product operation under each potential failure condition including the following:
      a. Loss of power.
      b. Loss of network communication signal.
      c. Loss of controller signals to inputs and outpoints.
      d. Operator workstation failure.
      e. Server failure.
      f. Gateway failure.
      g. Network failure
      h. Controller failure.
      i. Instrument failure.

j. Control damper and valve actuator failure.
4. Complete bibliography of documentation and media to be delivered to Commissioner.
5. Description of testing plans and procedures.
6. Description of Instructions for Operating personnel.

1.9 INFORMATIONAL SUBMITTALS

A. Coordination Drawings:
1. Plan drawings and corresponding product installation details, drawn to scale, on which the following items are shown and coordinated with each other, using input from installers of the items involved:
a. Product installation location shown in relationship to room, duct, pipe and equipment.
b. Structural members to which products will be attached.
c. Wall-mounted instruments located in finished space showing relationship to light switches, fire-alarm devices and other installed devices.
d. Size and location of wall access panels for products installed behind walls and requiring access.
2. Reflected ceiling plans and other details, drawn to scale, on which the following items are shown and coordinated with each other, using input from installers of the items involved:
a. Ceiling components.
b. Size and location of access panels for products installed above inaccessible ceiling assemblies and requiring access.
c. Items penetrating finished ceiling including the following:
1) Lighting fixtures.
2) Air outlets and inlets.
3) Speakers.
4) Sprinklers.
5) Access panels.
6) Motion sensors.
7) Pressure sensors.
8) Temperature sensors and other Direct Digital Control system instruments.

1.10 CLOSEOUT SUBMITTALS

A. Refer to DDC General Conditions.

B. Operation and Maintenance Data: For Direct Digital Control system to include in emergency, operation, and maintenance manuals.
1. Include the following information:
a. Project Record Drawings of as-built versions of submittal Shop Drawings provided in electronic PDF format.
b. Testing and commissioning reports and checklists of completed final versions of reports, checklists, and trend logs.
c. As-built versions of submittal Product Data.
d. Names, addresses, e-mail addresses, and 24-hour telephone numbers of Installer and service representatives for Direct Digital Control system and products.

e. Operator's manual with procedures for operating control systems including logging on and off, handling alarms, producing point reports, trending data, overriding computer control, and changing set points and variables.
f. Programming manuals with description of programming language and syntax, of statements for algorithms and calculations used, of point database creation and modification, of program creation and modification, and of editor use.
g. Engineering, installation, and maintenance manuals that explain how to:
    1) Design and install new points, panels, and other hardware.
    2) Perform preventive maintenance and calibration.
    3) Debug hardware problems.
    4) Repair or replace hardware.
h. Documentation of all programs created using custom programming language including set points, tuning parameters, and object database.
i. Backup copy of graphic files, programs, and database on electronic media such as DVD or memory stick/drive.
j. List of recommended spare parts with part numbers and suppliers.
k. Complete original-issue documentation, installation, and maintenance information for furnished third-party hardware including computer equipment and sensors.
l. Complete original-issue copies of furnished software, including operating systems, custom programming language, operator workstation software, and graphics software.
m. Licenses, guarantees, and warranty documents as included in DDC General Conditions
n. Recommended preventive maintenance procedures for system components, including schedule of tasks such as inspection, cleaning, and calibration; time between tasks; and task descriptions.
o. Owner training materials.

1.11 DELIVERY, STORAGE, AND HANDLING

A. Factory-Mounted Components: Where control devices specified in this Section are indicated to be factory mounted on equipment, arrange for shipping of control devices to equipment manufacturer.

B. System Software: Update to latest version of software at Project completion.

1.12 COORDINATION

A. Coordinate location of thermostats, humidistats, and other exposed control sensors with plans and room details before installation.

B. Coordinate supply of conditioned electrical branch circuits for control units and operator workstation.

C. Coordinate size and location of concrete bases. Cast anchor-bolt inserts into bases. Concrete, reinforcement, and formwork requirements are specified in Section 03 30 00 "Cast-in-Place Concrete."

PART 2 - PRODUCTS

2.1 CONTROL SYSTEM

A. Manufacturers: No Substitution.
   1. Automated Logic Corporation: System must be consistent with the existing Automated Logic WebCTRl System.
   2. Contact Automated Logic NYNJ Branch Office, James McDermott, james.mcdermott@carrier.com, 973-985-9241

B. Control system shall consist of sensors, indicators, actuators, final control elements, interface equipment, other apparatus, and accessories to control mechanical systems and software connected to distributed controllers operating in multiuser, multitasking environment on token-passing network and programmed to control mechanical systems. An operator workstation permits interface with the network via dynamic color graphics with each mechanical system, building floor plan, and control device depicted by point-and-click graphics.

2.2 DIRECT DIGITAL CONTROL EQUIPMENT

A. Operator Workstation: One tower all in one computer designed for normal use at a single, semipermanent location: Performance requirements may dictate equipment exceeding minimum requirements.
   1. Processor: i7 ; min 3.2 GHZ
   2. Random-Access Memory: 4 GB.
   3. Graphics: Video Card 1TB minimum 1920 x 1200 pixels,
   4. Flatpanel display monitorMonitor: 24” LCD color.
   5. Keyboard: QWERTY, 105 keys in ergonomic shape.
   6. Optical Read/Write Drive
   7. Mouse: Three button, optical.
   8. Network interface card
   9. Uninterruptible Power Supply
   10. Operating System: Windows 10 or higher, with high-speed Internet access.
   11. Printer: Color, laser type as follows:
      a. Print Head: 1200 x 1200 color resolution.
      b. Paper Handling: Minimum of 100
      c. Print Speed: Minimum of 17 ppm in black and 12ppm in color.
   12. Application Software:
      a. Upgrade existing Automated Logic software to WebCTRL 8.0
      b. I/O capability from operator station.
      c. System security for each operator via software password and access levels.
      d. Automatic system diagnostics; monitor system and report failures.
      e. Database creation and support.
      f. Automatic and manual database save and restore.
      g. Dynamic color graphic displays with up to 10 screen displays at once.
      h. Custom graphics generation and graphics library of HVAC equipment and symbols.
      i. Alarm processing, messages, and reactions.
      j. Trend logs retrievable in spreadsheets and database programs.

k. Alarm and event processing.
l. Object and property status and control.
m. Automatic restart of field equipment on restoration of power.
n. Data collection, reports, and logs. Include standard reports for the following:
   1) Current values of all objects.
   2) Current alarm summary.
   3) Disabled objects.
   4) Alarm lockout objects.
   5) Logs.
o. Custom report development.
p. Utility and weather reports.
q. Workstation application editors for controllers and schedules.

13. Custom Application Software:
    a. English language oriented.
    b. Full-screen character editor/programming environment.
    c. Allow development of independently executing program modules with debugging/simulation capability.
    d. Support conditional statements.
    e. Support floating-point arithmetic with mathematic functions.
    f. Contains predefined time variables.

B. Servers
1. Description: x86-based permanently installed computer used for client-server computing.
2. Mounting: Rack
3. Power: Dual power supply, minimum 300 W.
4. Performance Requirements:
   a. Performance requirements may dictate equipment exceeding minimum requirements indicated.
   b. Energy Star compliant.
   c. Dual Core
   d. RAM: 2GB
5. Network Interface: Dual port Gigabit Ethernet
6. DVD +RW Drive.
7. Color, flat-screen display with diagonal viewable area.
8. Keyboard and mouse.
9. Next-day on-site warranty for two period following Substantial Completion.
10. Servers shall include the following:
    a. Full-feature backup server (server and backup minimum requirement).
    b. Software licenses.
    c. Cable installation between server(s) and network.
11. Power each server through a dedicated UPS unit.

C. Control Units: Modular, comprising processor board with programmable, nonvolatile, random-access memory; local operator access and display panel; integral interface equipment; and backup power source.
1. Units monitor or control each I/O point; process information; execute commands from other control units, devices, and operator stations; and download from or upload to operator workstation or diagnostic terminal unit.
2. Stand-alone mode control functions operate regardless of network status. Functions include the following:

a. Global communications.
b. Discrete/digital, analog, and pulse I/O.
c. Monitoring, controlling, or addressing data points.
d. Software applications, scheduling, and alarm processing.
e. Testing and developing control algorithms without disrupting field hardware and controlled environment.

3. Standard Application Programs:
   a. Electric Control Programs: Demand limiting, duty cycling, automatic time scheduling, start/stop time optimization, night setback/setup, on-off control with differential sequencing, staggered start, antishort cycling, PID control, DDC with fine tuning, and trend logging.
   b. HVAC Control Programs: Optimal run time, supply-air reset, and enthalpy switchover.
   c. Chiller Control Programs: Control function of condenser-water reset, chilled-water reset, and equipment sequencing.
   d. Programming Application Features: Include trend point; alarm processing and messaging; weekly, monthly, and annual scheduling; energy calculations; run-time totalization; and security access.
   e. Remote communications.
   f. Maintenance management.
   g. Units of Measure: Inch-pound and SI (metric).
4. Local operator interface provides for download from or upload to operator workstation or diagnostic terminal unit.
5. ASHRAE 135 Compliance: Control units shall use ASHRAE 135 protocol and communicate using ISO 8802-3 (Ethernet) datalink/physical layer protocol.

D. Local Control Units: Modular, comprising processor board with electronically programmable, nonvolatile, read-only memory; and backup power source.
1. Units monitor or control each I/O point, process information, and download from or upload to operator workstation or diagnostic terminal unit.
2. Stand-alone mode control functions operate regardless of network status. Functions include the following:
   a. Global communications.
   b. Discrete/digital, analog, and pulse I/O.
   c. Monitoring, controlling, or addressing data points.
3. Local operator interface provides for download from or upload to operator workstation or diagnostic terminal unit.
4. ASHRAE 135 Compliance: Control units shall use ASHRAE 135 protocol and communicate using ISO 8802-3 (Ethernet) datalink/physical layer protocol.

E. I/O Interface: Hardwired inputs and outputs may tie into system through controllers. Protect points so that shorting will cause no damage to controllers.
1. Binary Inputs: Allow monitoring of on-off signals without external power.
2. Pulse Accumulation Inputs: Accept up to 10 pulses per second.
3. Analog Inputs: Allow monitoring of low-voltage (0- to 10-V dc), current (4 to 20 mA), or resistance signals.
4. Binary Outputs: Provide on-off or pulsed low-voltage signal, selectable for normally open or normally closed operation
5. Analog Outputs: Provide modulating signal, either low voltage (0- to 10-V dc) or current (4 to 20 mA)

6. Tri-State Outputs: Provide two coordinated binary outputs for control of three-point, floating-type electronic actuators.
7. Universal I/Os: Provide software selectable binary or analog outputs.

F. Power Supplies: Transformers with Class 2 current-limiting type or overcurrent protection; limit connected loads to 80 percent of rated capacity. DC power supply shall match output current and voltage requirements and be full-wave rectifier type with the following:
1. Output ripple of 5.0 mV maximum peak to peak.
2. Combined 1 percent line and load regulation with 100-mic.sec. response time for 50 percent load changes.
3. Built-in overvoltage and overcurrent protection and be able to withstand 150 percent overload for at least 3 seconds without failure.

G. Power Line Filtering: Internal or external transient voltage and surge suppression for workstations or controllers with the following:
1. Minimum dielectric strength of 1000 V.
2. Maximum response time of 10 nanoseconds.
3. Minimum transverse-mode noise attenuation of 65 dB.
4. Minimum common-mode noise attenuation of 150 dB at 40 to 100 Hz.

2.3 UNITARY CONTROLLERS

A. Unitized, capable of stand-alone operation with sufficient memory to support its operating system, database, and programming requirements, and with sufficient I/O capacity for the application.
1. Operating System: Manage I/O communication to allow distributed controllers to share real and virtual object information and allow central monitoring and alarms. Perform scheduling with real-time clock. Perform automatic system diagnostics; monitor system and report failures.
2. ASHRAE 135 Compliance: Communicate using read (execute and initiate) and write (execute and initiate) property services defined in ASHRAE 135. Reside on network using MS/TP datalink/physical layer protocol and have service communication port for connection to diagnostic terminal unit.
3. Indoor Enclosure: Dustproof rated for operation at 32 to 120 deg F
4. Outdoor Enclosure: Waterproof rated for operation at 40 to 150 deg F

2.4 ALARM PANELS

A. Unitized cabinet with suitable brackets for wall or floor mounting. Fabricate of 0.06-inch- thick, furniture-quality steel or extruded-aluminum alloy, totally enclosed, with hinged doors and keyed lock and with manufacturer's standard shop-painted finish

B. Indicating light for each alarm point, single horn, acknowledge switch, and test switch, mounted on hinged cover.
1. Alarm Condition: Indicating light flashes and horn sounds.
2. Acknowledge Switch: Horn is silent and indicating light is steady.
3. Second Alarm: Horn sounds and indicating light is steady.
4. Alarm Condition Cleared: System is reset and indicating light is extinguished.

5. Contacts in alarm panel allow remote monitoring by independent alarm company.

2.5 ANALOG CONTROLLERS

A. Step Controllers: 6- or 10-stage type, with heavy-duty switching rated to handle loads and operated by electric motor.

B. Electric, Outdoor-Reset Controllers: Remote-bulb or bimetal rod-and-tube type, proportioning action with adjustable throttling range, adjustable set point, scale range minus 10 to plus 70 deg F, and single- or double-pole contacts.

C. Fan-Speed Controllers: Solid-state model providing field-adjustable proportional control of motor speed from maximum to minimum of 55 percent and on-off action below minimum fan speed. Controller shall briefly apply full voltage, when motor is started, to rapidly bring motor up to minimum speed. Equip with filtered circuit to eliminate radio interference.

D. Receiver Controllers: Single- or multiple-input models with control-point adjustment, direct or reverse acting with mechanical set-point adjustment with locking device, proportional band adjustment, authority adjustment, and proportional control mode.
   1. Remote-control-point adjustment shall be plus or minus 20 percent of sensor span, input signal of 3 to 13 psig (21 to 90 kPa).
   2. Proportional band shall extend from 2 to 20 percent for 5 psig (35 kPa).
   3. Authority shall be 20 to 200 percent.
   4. Air-supply pressure of 18 psig (124 kPa), input signal of 3 to 15 psig (21 to 103 kPa), and output signal of zero to supply pressure.
   5. Gages: 3-1/2 inches in diameter, 2.5 percent wide-scale accuracy, and range to match transmitter input or output pressure.

2.6 TIME CLOCKS

A. Seven-day, programming-switch timer with synchronous-timing motor and seven-day dial; continuously charged, nickel-cadmium-battery-driven, eight-hour, power-failure carryover; multiple-switch trippers; minimum of two and maximum of eight signals per day with two normally open and two normally closed output contacts.

B. Solid-state, programmable time control with 8 separate programs each with up to 100 on-off operations; 1-second resolution; lithium battery backup; keyboard interface and manual override; individual on-off-auto switches for each program; 365-day calendar with 20 programmable holidays; choice of fail-safe operation for each program; system fault alarm; and communications package allowing networking of time controls and programming from PC.

2.7 ELECTRONIC SENSORS

A. Temperature and Humidity Sensors and Transmitters
   1. General Sensor & Transmitter Requirements

a. Provide sensors and transmitters required as outlined in the input/output summary and sequence of operation and as required achieving the specified accuracy as specified herein.
b. Temperature transmitters shall be equipped with individual zero and span adjustments. The zero and span adjustments shall be non-interactive to permit calibration without iterative operations. Provide a loop test signal to aid in sensor calibration.
c. Temperature transmitters shall be sized and constructed to be compatible with the medium to be monitored. Transmitters shall be equipped with a linearization circuit to compensate for non-linearity of the sensor and bridge and provide a true linear output signal.
d. Temperature sensors shall be of the resistance type and shall be either three-wire 100-ohm platinum RTD, or two-wire 1000-ohm platinum RTD.
e. Thermistors may be acceptable provided that the temperature vs. resistance curves are contained either in the controller's software or firmware and that its performance is as specified herein elsewhere. Submit proof of the software mathematical equation or the firmware conversion charts together with the temperature/resistance charts from the manufacturer of the sensor. Thermistors shall be of the Thermistor (NTC) Type with a minimum of 100 ohm/°F resistance change versus temperature to insure good resolution and accuracy. Thermistors shall be certified to be stable ±0.24°F. over five years and ±0.36°F. accurate and free from drift for five years.

2. Thermowells
   a. Thermo-wells are required for all temperature sensors in fluids transported within piping such as, but not limited to, water and steam.
   b. Thermo-wells shall be supplied as a complete assembly including the sensor, separable well, wellhead and Greenfield fitting.
   c. Thermowells shall be pressure rated and constructed in accordance with the system working pressure
   d. Thermowells and sensors shall be mounted in a threadolet or 1/2" NPT saddle and allow easy access to the sensor for repair or replacement.
   e. Thermowells shall be filled with heat-conductive compound which is specifically manufactured for the application. The compound shall be suitable for the temperature range being sensed.
   f. Thermowells shall be constructed of the following materials:
      1) Chilled and Hot Water; brass.
      2) Steam; 316 stainless steel.
3. Duct-Mounted Sensors
   a. Duct-mounted sensors shall mount in a handibox through a hole in the duct and be positioned so as to be easily accessible for repair or replacement. A neoprene grommet (Sealtite fitting and mounting plate) shall be used on the sensor assembly to prevent air leaks.
   b. Duct sensors shall be insertion type allowable for discharge air temperature measurement.
4. Duct Relative Humidity & Temperature Sensors
   a. Specifications – Humidity Element

Operating range	0 to 100% RH
Accuracy at 68°F (20°C)	±2% RH, 20-95% RH including hysteresis, linearity, and repeatability
Operating temperature	32 to 122°F (-6 to 50°C)
Temperature effect	Less than 0.06% per degree F
Sensing element	Capacitive

Output signal-RH only units	4-20 mA, 0-10 VDC, 0-100% linear, proportional (Provide interface to BACnet controller)
Output signal-RH/T units	0-10 VDC, 0-100% linear, proportional
Polarity protection	Yes

b. Specifications – Temperature Element

Operating temperature	20 to 122°F (-6 to 50°C)
RTD calibration point	32°F (0°C)
Accuracy	±1°F (±0.55°C)
Sensing element	1,000 Ohm RTD
Output signal	0-10 VDC 0-100% linear, proportional
Calibration adjustments	None required

c. General Specifications

Installation	18 AWG cable length shared in conduit with other sensor wiring 750-ft (229m) max
Connections	Screw terminals
Dimensions	Duct Probe: 1/2" O.D. x 7"L (123.7 mm x 177.8 mm)
	Duct Housing: 4" L x 4½" W x 2½" D (102 mm x 115 mm x 64 mm)
Voltage requirement	13.5 to 35 VDC or 24 VAC
Duct RH/T Sensor 5% (0-10 VDC)	

d. Manufacturers and Model Numbers:
1) Siemens Model Number 538-896
2) Kele GEH series
3) Bapi Model Number BA/xx-H210 or
4) Dwyer Series RH or approved equal
5) Or approved equal

5. Room Relative Humidity Sensors

a. Specifications – Humidity Element

Operating Range	0-100% RH
Accuracy at 77°F	±2% at 20-95 RH% including hysteresis, linearity, and repeatability
(Element only)	
Sensing Element	Capacitive
Operating Temperature	32-122°F
Temperature Effect	Less than 0.06%/°F

Output Signal (RH/T Unit) 4-20 ma DC 0-100% linear, proportional	

b. Manufacturers: No Substitution
   1) Automated Logic ZS Sensors with Humidity

6. Outside Air Temperature and Humidity Sensors
   a. Outside air temperature and humidity sensors shall be designed to withstand the environmental conditions to which they will be exposed. All outdoor applications shall utilize NEMA 4x enclosures. The sensing element shall be 100-ohm platinum RTB with minimum 2% accuracy over the operable range of not less than -30°F to 130°F service. They shall also be provided with a solar shield.
   b. The outside air temperature sensor shall be furnished with a sun-shield to reduce the heating effects of reflected sunlight from adjacent surfaces. This shield surrounding the sensor element shall also protect the sensors against wind velocity effects.
   c. Outside sensors shall be mounted on a north-facing surface, out of direct sunlight, and away from other heat surfaces. Install the outside air humidity and CO2 sensors adjacent to the outside air temperature sensor.
   d. Outside Temperature and humidity sensors shall comply with the section 2.8.and shall be rated for ambient temperatures.
   e. Manufacturers and Model Numbers:
      1) Bapi BA/xx-H210-0-EU.
      2) Veris HO series.
      3) Greystone TE200 series.
      4) Or approved equal.
7. Room Sensors (Temperature Only)
   a. Provide Automated Logic ZS Sensors
   b. Provide guard to prevent accidental damage.
   c. Terminal unit temperature sensors shall all be of the thermistor (NTC) type with a 100-ohm/oF resistance change versus temperature change to insure good resolution and accuracy.
   d. Sensor shall be supplied with a vertical base for mounting on a standard single gang junction box supplied by the Temperature Control Subcontractor.
   e. Sensors shall be able to provide access to a local BACnet network using built-in communication jack.
8. Programmable BACnet thermostats (with ability to connect to BACnet network)
   a. In lieu of having a separate remote temperature sensor driving a native BACnet controller, one may combine the sensor and controller components into one thermostat. This could be optionally used for fan coil units, heat pump units, unit heaters, cabinet unit heaters, and thermostats that drive terminal unit finned-tube radiator or convector electronic valve operators. BACnet thermostats for Classrooms, PA Spaces and Corridors shall be provided with guards.
   b. BACnet thermostats shall have integral temperature sensor with LCD and setpoint adjustments of +3ºF. Projects shall use a central BACnet scheduler.
   c. Thermostat shall be powered from 24VAC. Thermostat shall provide BACnet Standard Objects for Space Comfort Controller. Thermostat shall be able to provide peer to peer communication and shall utilize the BAcnet protocol.
   d. General Specifications:

1) Power: Nominal 24 VAC, 60 Hz.
2) Operating Temperature: 32ºF to 122ºF
3) Display Range: -40ºF to 122ºF
4) Transceiver for MS/TP network: RS-485; 38.4 kbps
5) LCD: 2 rows – 8 characters each
6) Resolution: +/- 0.2ºF
7) Control Accuracy: +/- 0.9ºF at 70ºF (calibrated)
8) Sensor Range: Heating: 40ºF to 90ºF
9) Sensor Range: Cooling: 54ºF to 100ºF
10) Provide local programmable occupied/unoccupied override adjustment
11) Remote mount temperature sensor: shall be rated at 10 K-ohm NTC thermistors.

e. Manufacturers shall be:
1) Automated Logic
2) Distech: EC-Stat.
3) Viconics: VT7200 or VT7600 depending on application.
4) Johnson TEC22xx.
5) Or approved equal.

B. Differential Pressure Transmitters and Accessories

1. General Air and Water Pressure Transmitter Requirements:
a. Pressure transmitters shall be constructed to withstand 100% pressure over-range without damage and to hold calibrated accuracy when subject to a momentary 40% over-range input.
b. Pressure transmitters shall provide the option to transmit a 0 to 5VDC, 0 to 10VDC, or 4 to 20 mA output signal.
c. Differential pressure transmitters used for flow measurement shall be sized to the flow sensing device and shall be supplied with shutoff and bleed valves in the high and low sensing pick-up lines (two way or 3-way valve manifolds as applicable).
d. Provide the transmitter with a NEMA rating suitable for its installed location. Locate transmitters in accessible local control panels wherever possible.
e. Duct sensing pressure applications where the velocity exceeds 1500 fpm shall utilize static pressure traverse probes.

2. Low Air Pressure Applications (0 to 0.5-inch WC)
a. The pressure transmitter shall be capable of transmitting a linear electronic signal proportional to the differential of the room and reference static pressure input signals with the following minimum performance specifications.
1) Span: Not greater than two times the design differential pressure.
2) Accuracy: Plus or minus 0.5% of F.S.
3) Dead Band: Less than 0.3% of output.
4) Repeatability: Within 0.2% of output.
5) Linearity: Plus or minus 0.2% of span.
6) Response: Less than one second for full span input.
7) Temperature Stability: Output < 0.01%/°F shift.
8) Pressure transmitters shall transmit a 0 to 5VDC, 0 to 10VDC, or 4 to 20 mA output signals.
b. The transmitter shall utilize variable capacitance sensor technology and be immune to shock and vibration.
c. Manufacturers:
1) Veris Industries PX series.

2) Setra Model 260.
3) Ashcroft CXLDP.
4) Dwyer Series MS.
5) Or approved equal.

3. Medium to High Air Pressure Applications (0.5 to 10.0-inch WC)
   a. The pressure transmitter shall be similar to the Low Air Pressure Transmitter except the performance specifications are not as severe. Provide differential pressure transmitters which meet the following performance requirements:
      1) Zero & span: (% F.S./Deg. F): 0.041% including linearity, hysteresis and repeatability.
      2) Accuracy: 1% F.S. (best straight line).
      3) Static Pressure Effect: 0.5% F.S. (to 100 psig).
      4) Thermal Effects: <±.03% F.S./°F over 40°F to 100°F (calibrated at 70°F.)
      5) Pressure transmitters shall transmit a 0 to 5VDC, 0 to 10VDC, or 4 to 20 mA output signal.
   b. Manufacturers:
      1) Setra Model 264.
      2) Veris Industries PX series.
      3) Dwyer Series 616W, MS.
      4) Greystone LP1 series.
      5) Or approved equal.
4. Low Differential, Water Pressure Applications (0 to 20-inch WC)
   a. The differential pressure transmitter shall be of industrial quality and transmit a linear output in response to variation of flow meter differential pressure or water pressure sensing points.
   b. The differential pressure transmitter shall have non-interactive zero and span adjustments adjustable from the outside cover and meet the following performance specifications.
      1) 0.01-20-inch WC input differential pressure range
      2) Maintain accuracy up to 20:1 turndown ratio
      3) Reference Accuracy: ± 0.2 % of full span
      4) Pressure transmitters shall transmit a 0-5 VDC, 0-10 VDC, or 4-20 mA output signal.
      5) Manufacturers:
         a) Tobar - Model 75DPl.
         b) Foxboro - Model 823 DP.
         c) Omega - Model PX750 - 15OD1.
         d) Dwyer Series 655.
         e) Or approved equal.
5. Medium to High Differential Water Pressure Applications (21-inch WC to 100 psi)
   a. The differential pressure transmitter shall meet the low pressure transmitter specifications except the following:
      1) Differential pressure range from 21-inch WC to 100 psi.
      2) Reference Accuracy: ± l% of full span (includes non-linearity, hysteresis, and repeatability)
      3) Pressure transmitters shall transmit a 0-5VDC, 0-10VDC, or 4-20 mA output signal.
   b. Manufacturers:
      1) Veris Industries PW series.
      2) Kele W30 series.
      3) Greystone WP-D.
      4) Series 629 & 645 Dwyer.
      5) Setra 230 Series.

6) Or approved equal.

6. Bypass Valve Assembly: Mount stand-alone pressure transmitters in a bypass valve assembly panel. The panel shall be constructed to NEMA 1 standards. The transmitter shall be installed in the panel with hi and low connections piped and valved. Air bleed units, bypass valves and compression fittings shall be provided.

C. Electronic Valve & Damper Actuators
   1. General Requirements (where required)
      a. Electronic actuators shall be electric, direct-coupled type capable of being mounted over the shaft of the damper. They shall be UL-listed and the manufacturer shall provide a 2-year unconditional warranty from the date of Substantial Completion. Power consumption shall not exceed 8 watts or 15 VA of transformer sizing capacity per high torque actuator nor 2 watts or 4 VA for VAV actuators. Sound level shall not exceed 45 dB for high torque or 35 dB for VAV actuators.
      b. Electronic overload protection shall protect actuator motor from damage. If damper jams, actuator shall not burnout. Internal end switch type actuators are not acceptable. Actuators may be mechanically and electrically paralleled on the same shaft to multiply the available torque. A reversing switch shall be provided to change action from direct to reverse in relation to control signal as operation requires.
      c. Electronic valve and damper modulating actuators shall be driven by a 0-10VDc or 4-20 mA signal. Electronic valve on/off actuators shall be driven by 24VAC signal.
   2. Control Damper Actuators
      a. Outside Air (OA) and Exhaust Air (EXH) actuators shall be modulating, spring-return, normally-closed for fail-safe operation.
      b. The control circuit shall be fully modulating using 0-10VDC or 4-20mA signals. Accuracy and repeatability shall be within ±1/21 of control signal. A 0-10VDC or 4-20mA signal shall be produced by the actuator that is directly proportional to the shaft clamp position which can be used to control actuators which are paralleled off a master motor or to provide a feedback signal to the automation system indicating damper position. Accuracy shall be within ±2.5%.
      c. Face and bypass dampers and other control dampers shall be modulated using the same control circuit detailed above but shall not be spring-return.
      d. Manufacturers:
         1) Belimo.
         2) Siemens (formerly Staefa).
         3) Dodge.
         4) TAC.
         5) Delta.
         6) Or approved equal.
   3. Miscellaneous Damper Actuators
      a. OA combustion and ventilation air intake and exhaust damper actuators shall be two-position, spring-return, normally-closed if any water piping, coils or other equipment in the space which the damper serves needs to be protected from freezing. Otherwise drive open, drive closed type 2 position may be used. The minimum torque for any actuator shall be 50 inch-lbs.
      b. Manufacturers:
         1) Belimo.
         2) Siemens (formerly Staefa).
         3) Dodge.
         4) Delta.

5) Or approved equal.

4. Valve Actuators
   a. Control Valves Actuators (3 inch and smaller)
      1) Actuators shall have a gear release button on all non-spring return models to allow manual setting. Pipes shall be fully insulated and heat shields shall be installed if necessary.
      2) The control circuit shall be on/off using 24VAC signals or fully modulating using 0-10 volt or 4-20 mA signals. Accuracy and repeatability shall be within 1/21 of control signal. A 0-10VDC or 4-20mA feedback signal shall be produced by the actuator which is directly proportional to the shaft clamp position which can be used to control actuators which are paralleled off a master motor or to provide a feedback signal to the automation system indicating valve position.
      3) Valve body and actuators shall be shipped fully assembled and tested at the valve factory prior to shipment.
         a) Manufacturers:
            i. Dodge.
            ii. Delta.
            iii. Belimo.
            iv. Siemens (formerly Staefa).
            v. Schneider Electric.
            vi. Honeywell Inc.
            vii. Johnson Controls Inc.
            viii. Or approved equal.
   b. Control Valve Actuators (4 inch and larger).
      1) The valve actuator shall consist of a permanent split capacitor, reversible type electric motor that drives a compound epicycle gear. Unit shall be mounting directly to the valves without brackets and adapters, or readily adapted to suit all other type quarter-turn valves.
      2) The actuator shall have an integral terminal strip, which, through conduit entries, will ensure simple wiring to power supplies.
      3) The actuator shall be constructed to withstand high shock and vibrations without operations failure. One copy of the wiring diagram shall be provided with the actuator.
      4) The actuator shall have a self-locking gear train which is permanently lubricated at the factory. The gearing shall be run on ball and needle bearings. Actuators with 600 in/lbs. or more output torque shall have two adjustable factory calibrated mechanical torque limit switches of the single-pole, double-throw type. The motor shall be fitted with thermal overload protection. Motor rotor shaft shall run in ball bearings at each end of motor.
      5) The environmental temperature range of the actuator shall be -30°C to +60°C (-20°F to +140°F).
      6) The actuator shall be capable of operating 100% of the time at an ambient temperature of 40°C.
      7) The actuator shall have an integral self-locking gear train. Motor brakes shall not be required to maintain desired valve position. Levers or latches shall not be required to engage or disengage the manual override. Mechanical travel stops, adjustable to 15° in each direction of 90° rotation shall be standard, as well as two adjustable travel limit switches with electrically isolated contacts. Additional adjustable switches shall be available as option.

8) Manufacturers:
   a) Belimo.
   b) Automax.
   c) Tyco.
   d) Worcester.
   e) Or approved equal.

D. Automatic Control Valves
   1. All automatic control valves shall be single-seated globe valves and shall have equal percentage flow characteristics unless specified otherwise. The valves shall be quiet in operation and fail-safe in either normally open or normally closed position in the event of power failure. All valves shall be capable of operating at varying rates of speed to correspond to the exact dictates of the controllers and variable load requirements. The valves shall be capable of operating in sequence with other valves and/or dampers when required by the sequence of operation. Have all control valves sized by the control manufacturer and guaranteed to meet heating and cooling loads as scheduled. All control valves shall be suitable for the pressure conditions under which they operate and shall close against the differential pressures actually experienced. Valve operators shall be spring return electrically actuated type. Body pressure rating and connection type construction shall conform to the working pressure of the specified system. Control valves 2 inches and smaller shall have bronze bodies and stainless steel trim and stem. End connections shall be threaded. Control valves 2-1/2 inches and larger in a service where pressure does not exceed 125 psig at 350 degrees F or where steam pressure does not exceed 100 psig shall have 125 pound cast iron bodies. Trim and stem shall be stainless steel. End connections shall be flanged. Valves 2-1/2 inch and larger in a service where pressure does not exceed 250 psig at 400 degrees F shall have 250 pound cast iron bodies. Trim and stem shall be stainless steel. End connections shall be flanged. Valves shall have sufficient stuffing box protection to ensure against leakage at hydrostatic head involved. Control valve operators shall be sized to close against a differential pressure equal to the design pump head plus 10 percent. Where pressure and flow combinations exceed ratings for commercial valves and operators, furnish and install industrial class single-seated valves and operators or double-seated valve with an ANSI Class III leakage (0.1 percent of rated valve capacity).
   2. Single-seated valves shall meet ANSI Class IV leakage (0.01 percent of Cv).
   3. Chilled water and hot water control valves shall have equal percentage flow characteristics. Steam control valves shall be single seated type with linear flow characteristics. Whenever the steam flow rate is such as to require a single valve larger than 2-1/2 inches, furnish and install two valves in parallel, arranged to operate in sequence. Low pressure (15 psig) steam valves shall provide tight closure at a pressure at least 10 psig higher than the normal, maximum operating pressure.
   4. Control valve shall be equipped with travel indicator (pointer) attached to stem and a travel indicator scale attached to the yoke to indicate valve travel.
   5. Automatic control valves shall be tagged for identification. Tags shall be brass with identification lettering stamped with letter punches and attached with brass wire or chain.
   6. Control valves shall be sized using the Flow Coefficient, Cv formulas for sub-critical conditions for liquids and steam.

PART 3 - EXECUTION

3.1 EXECUTION REQUIREMENTS

A. Refer to DDC General Conditions for the requirements governing execution.

B. Verify that power supply is available to control units and operator workstation.

C. Verify that all sensors and equipment-mounted devices are installed before proceeding with installation.

3.2 INSTALLATION

A. Install software in control units and operator workstation(s). Implement all features of programs to specified requirements and as appropriate to sequence of operation.

B. Connect and configure equipment and software to achieve sequence of operation specified.

C. Verify mounting heights to comply with requirements of the Americans with Disabilities Act.

D. Verify location of thermostats, humidistats, and other exposed control sensors with Drawings and room details before installation. Install devices 60 inches above the floor.

E. Install averaging elements in ducts and plenums in crossing or zigzag pattern.

F. Install guards on thermostats in the following locations:
1. Entrances.
2. Public areas.
3. Where indicated.

G. Install damper motors on outside of duct in warm areas, not in locations exposed to outdoor temperatures.

H. Install labels and nameplates to identify control components according to Section 230553 "Identification for HVAC Piping and Equipment."

I. Install hydronic instrument wells, valves, and other accessories according to Section 232116 Hydronic Piping Specialties."

J. Install steam and condensate instrument wells, valves, and other accessories.

3.3 ELECTRICAL WIRING AND CONNECTION INSTALLATION

A. Install raceways, boxes, and cabinets according to Section 26 05 33 "Raceways and Boxes for Electrical Systems."

B. Install building wire and cable according to Section 26 05 19 "Low-Voltage Electrical Power Conductors and Cables."

C. Install signal and communication cable according to following requirements.
   1. Conceal cable, except in mechanical rooms and areas where other conduit and piping are exposed.
   2. Install exposed cable in raceway.
   3. Install concealed cable in raceway.
   4. Bundle and harness multiconductor instrument cable in place of single cables where several cables follow a common path.
   5. Fasten flexible conductors, bridging cabinets and doors, along hinge side; protect against abrasion. Tie and support conductors.
   6. Number-code or color-code conductors for future identification and service of control system, except local individual room control cables.
   7. Install wire and cable with sufficient slack and flexible connections to allow for vibration of piping and equipment.

D. Connect manual-reset limit controls independent of manual-control switch positions. Automatic duct heater resets may be connected in interlock circuit of power controllers.

E. Connect hand-off-auto selector switches to override automatic interlock controls when switch is in hand position.

3.4 FIELD QUALITY CONTROL

A. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect, test, and adjust field-assembled components and equipment installation, including connections, and to assist in field testing. Report results in writing.

B. Perform the following field tests and inspections and prepare test reports:
   1. Operational Test: After electrical circuitry has been energized, start units to confirm proper unit operation. Remove and replace malfunctioning units and retest.
   2. Test and adjust controls and safeties.
   3. Test calibration of electronic controllers by disconnecting input sensors and stimulating operation with compatible signal generator.
   4. Test each point through its full operating range to verify that safety and operating control set points are as required.
   5. Test each control loop to verify stable mode of operation and compliance with sequence of operation. Adjust PID actions.
   6. Test each system for compliance with sequence of operation.
   7. Test software and hardware interlocks.

C. Direct Digital Control Verification:
   1. Verify that instruments are installed before calibration, testing, and loop or leak checks.
   2. Check instruments for proper location and accessibility.
   3. Check instrument installation for direction of flow, elevation, orientation, insertion depth, and other applicable considerations.
   4. Check installation of air supply for each instrument.
   5. Check flow instruments. Inspect tag number and line and bore size, and verify that inlet side is identified and that meters are installed correctly.

6. Check pressure instruments, piping slope, installation of valve manifold, and self-contained pressure regulators.
7. Check temperature instruments and material and length of sensing elements.
8. Check control valves. Verify that they are in correct direction.
9. Check air-operated dampers. Verify that pressure gages are provided and that proper blade alignment, either parallel or opposed, has been provided.
10. Check Direct Digital Control system as follows:
    a. Verify that Direct Digital Control controller power supply is from emergency power supply, if applicable.
    b. Verify that wires at control panels are tagged with their service designation and approved tagging system.
    c. Verify that spare I/O capacity has been provided.
    d. Verify that Direct Digital Controllers are protected from power supply surges.

D. Replace damaged or malfunctioning controls and equipment and repeat testing procedures.

3.5 ADJUSTING

A. Calibrating and Adjusting:
1. Calibrate instruments.
2. Make three-point calibration test for both linearity and accuracy for each analog instrument.
3. Calibrate equipment and procedures using manufacturer's written recommendations and instruction manuals. Use test equipment with accuracy at least double that of instrument being calibrated.
4. Control System Inputs and Outputs:
    a. Check analog inputs at 0, 50, and 100 percent of span.
    b. Check analog outputs using milliampere meter at 0, 50, and 100 percent output.
    c. Check digital inputs using jumper wire.
    d. Check digital outputs using ohmmeter to test for contact making or breaking.
    e. Check resistance temperature inputs at 0, 50, and 100 percent of span using a precision-resistant source.
5. Flow:
    a. Set differential pressure flow transmitters for 0 and 100 percent values with 3-point calibration accomplished at 50, 90, and 100 percent of span.
    b. Manually operate flow switches to verify that they make or break contact.
6. Pressure:
    a. Calibrate pressure transmitters at 0, 50, and 100 percent of span.
    b. Calibrate pressure switches to make or break contacts, with adjustable differential set at minimum.
7. Temperature:
    a. Calibrate resistance temperature transmitters at 0, 50, and 100 percent of span using a precision-resistance source.
    b. Calibrate temperature switches to make or break contacts.
8. Stroke and adjust control valves and dampers without positioners, following the manufacturer's recommended procedure, so that valve or damper is 100 percent open and closed.
9. Stroke and adjust control valves and dampers with positioners, following manufacturer's recommended procedure, so that valve and damper is 0, 50, and 100 percent closed.
10. Provide diagnostic and test instruments for calibration and adjustment of system.

11. Provide written description of procedures and equipment for calibrating each type of instrument. Submit procedures review and approval before initiating startup procedures.

B. Adjust initial temperature and humidity set points.

C. Occupancy Adjustments: When requested within 12 months of date of Substantial Completion, provide on-site assistance in adjusting system to suit actual occupied conditions. Provide up to three visits to Project during other than normal occupancy hours for this purpose.

3.6 DEMONSTRATION

A. Engage a factory-authorized service representative to instruct Operating Personnel to adjust, operate, and maintain HVAC instrumentation and controls.

END OF SECTION 23 09 00

SECTION 23 09 93 - SEQUENCE OF OPERATIONS FOR HVAC 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 control sequences for HVAC systems, subsystems, and equipment.

B. This Section includes control sequence for existing and new systems, subsystems and equipment. Where indicated on contract documents as existing systems and subsystems, such shall follow original installed sequence of operation as indicated in this section or available from existing system installation or operations documents, sequence, building's operation and maintenance manuals and as required by original equipment manufacturer for installed system operation.

1.3 RELATED SECTIONS

A. Section 23 09 00 "Instrumentation and Control for HVAC" for control equipment and devices and for submittal requirements.

1.4 SUBMITTAL PROCEDURES

A. Refer to DDC General Conditions Section 01 33 00 "Submittal Procedures" for all submittals.

1.5 QUALITY ASSURANCE

A. Refer to DDC General Conditions Section 01 40 00 "Quality Requirements".

1.6 CHILLED WATER SYSTEM, ACCH-1, CHWP-1 AND CHWP-2

A. General

1. The chilled water system consists of one packaged Air Cooled Chiller ACCH-1 and two chilled water pumps CHWP-1 & 2.
2. One of chilled water pumps shall be designated as the standby pump as set by schedule.
3. The controls provided by the manufacturer of the chiller shall operate to maintain its programmed chilled water setpoint. The setpoint shall be adjustable from the BAS system through a 4-20 milliamp

analog output signal. Start/stop and status shall also be hardwired points to the BAS system primary control panel.

B. System Off

1. Chiller ACCH-1 shall be disabled.
2. Chilled Water Pumps CHWP-1 and CHWP-2 shall both be disabled .

C. System Start

1. Chiller ACCH-1 shall start through an outside air temperature software interlock , a call for cooling by software from AHU-1, a time schedule or manual command from the BAS.
2. Upon a need for chilled water, the lead chilled water pump shall start. Once chilled water pump status has been proven, the chiller shall be enabled through the BAS.
3. The controls provided by the manufacturer of the chiller shall operate to maintain its programmed chilled water supply or return setpoint.

D. System Run

1. The lead chilled water pump shall run continuously while the chiller is enabled to run. Provide lead/lag staging control of the pumps.
2. The Set point of the chilled water temperature shall be reset to the highest allowable level while maintaining space cooling requirements. Provide chilled water temperature optimization to reduce energy requirements by allowing the chilled water setpoint to increase upward under lower load conditions. Chilled water resetting shall be based on actual load, historical trends and predicted load.

E. System Stop

1. When the system is indexed off the chiller shall shut down and the chilled water pump shall turn off after a time delay (time is user selectable, refer to chiller manufacturers recommendation).

F. Safeties & Alarms

1. The BAS shall monitor chilled water supply and return temperatures and generate an alarm at the BAS interface panel if high or low alarm limits are exceeded.
2. The BAS shall monitor chiller control panel for common alarms.

G. Failure Modes

1. If the lead chilled water pump fails to start or continue operating, the lag chilled water pump shall start and run. An alarm shall be generated to the BAS to indicate primary pump failure.
2. Upon a power failure, equipment that is scheduled to operate under emergency power shall be enabled.
3. Upon restoration of normal power, equipment that is scheduled to run under normal power shall be enabled in a staggered fashion.

H. BAS Points Available at Operator Interface:

1. Inputs

Tag Name	Point Description
ChWPmpStatl	CHWP-1 Status
ChWPmpStat2	CHWP-2 Status
ChWSTemp	Chilled Water Supply Temperature
ChWRTemp	Chilled Water Return Temperature
ChlrStat	Chiller Status
ChlrAlm	Chiller Common Alarm
ChWDP	Chilled Water Differential Pressure

2. Outputs

Tag Name	Point Description
ChWPmpSSl	CHWP-1 Start/Stop
ChWPmpSS2	CHWP-2 Start/Stop
ChlrSS	Chiller ACCH-1 Start/Stop
ChlrStpt	Chiller ACCH-1 Setpoint

a. Alarms
b. Pump CHWP-1 fail.
c. Pump CHWP-2 fail.
d. Chiller common alarm.
e. Chilled water supply temperature high/low.

1.7 100% OUTDOOR AIR - AIR HANDLING UNIT, AHU-1

A. System Off

1. AHU-1 supply fan is off.
2. Outside Air Damper: Closed.
3. Cooling Coil Valve: Closed.
4. Preheat coil valve shall modulate to maintain the plenum temperature at 45° F (adj.).
5. Reheat Coil Valve : Closed.

6. Humidifier Valve: Closed.

B. System Start

1. The air-handling unit shall be started based upon a start time optimization program, time of day schedule or manual command.
2. When the air-handling unit is indexed to operate, all dampers shall open. The Outside Air Damper end switch (OADmpStat) shall prove damper status as "Open" prior to fan start. Where required, hard-wired smoke and/or fire/smoke damper end switches shall prove damper open status prior to fan start.
3. When the air-handling unit is indexed to operate, exhaust damper shall open and the fan shall be energized. For exhaust fan, either a hardwired or software interlock shall be provided

C. System Run:

1. Occupied Mode:
   a. Supply fan shall run continuously.
   b. Outdoor Air Damper shall be fully open.
   c. Preheat Coil Valve shall modulate to maintain a preheat coil discharge temperature (PreHtCoilTemp) at 45° F (adj.).
   d. Cooling Coil Valve: Modulate in sequence with the reheat coil valve to maintain the discharge air temperature at setpoint.
   e. Reheat Coil Valve: Modulate in sequence with the cooling coil valve to maintain the discharge air temperature setpoint.
2. Supplemental Heating Mode sequence:
   a. On a drop in space temperature below the heating setpoint of the controller, the heating control valves shall be modulated open in sequence with the smallest valve opening first. On a rise in space temperature over the space heating setpoint, the reverse of the sequence described above occurs.
3. Supplemental Cooling Mode sequence:
   a. Cooling mode shall be sequenced as included above for discharge air temperature, reheat and cooling coils controls.

D. Humidification Control:

1. If the outside air enthalpy exceeds 30 BTU/LB, humidification shall be disabled.
2. If the outside air enthalpy falls below 29 BTU /LB, humidification shall be enabled.
3. Modulate the humidifier valve to maintain humidification setpoint (adj.). The supply air humidity setpoint shall be reset based upon the space humidity.
4. A software humidity high limit shall limit the discharge duct humidity to ensure no condensation occurs downstream of the humidifier.

E. De-humidification Control:

1. Fully open cooling coil valve and modulate the reheat coil valve to deliver the proper dry bulb temperature discharge air at a reduced wet bulb temperature to satisfy the de-humidification setpoint (adj.).

F. System Stop:

1. When the AHU is indexed to shut down, the supply fan shall stop.
2. Dampers and valves shall be indexed to their "System Off ' conditions.

G. Safeties & Alarms

1. A hardwired and software programmed interlock employing a, manual reset, low limit thermostat shall stop the supply fan, close the outdoor air dampers and annunciate alarm to the BAS should the preheat coil discharge temperature (Low Temp Sw) fall below 38°F.
2. Low suction pressure switches shall stop the supply fan when duct pressure exceeds design and annunciate an alarm. Dampers shall be indexed to their "System Off' conditions. The fans shall remain off until the pressure switch is manually reset.
3. High discharge pressure switches shall stop the supply fan when duct pressure exceeds design and annunciate an alarm. Dampers shall be indexed to their "System Off' conditions. The fans shall remain off until the pressure switch is manually reset.
4. Annunciate a temperature. alarm to the BAS if the high or low programmed temperature limits are exceeded.
5. Monitor differential pressure across the AHU filter and annunciate an alarm when the differential pressure set point is exceeded.
6. Annunciate a fan failure alarm whenever the supply fan status does not equal the expect start command status.

H. Emergency Shutdown

1. Duct smoke detector(s) shall stop the fan and annunciate an alarm when products of combustion are detected in the air stream. The duct smoke detectors shall be wired into the building fire alarm system.
2. The fan shall be interlocked to shut down upon a command from the building fire alarm system . Dampers and control valves shall be indexed to their "System Off' conditions.

I. Failure Modes

1. If the supply fan fails to operate, the fan shall shut down and alarm shall be annunciated. Dampers and control valves shall be indexed to their "System Off' conditions.
2. Outdoor air damper shall be provided with spring return actuators to fail to their "System Off ' positions.
3. Steam heating valves shall be provided with spring return actuators to fail closed to the coil.
4. Chilled water valves shall be provided with spring return actuators to fail closed to the coil.
5. Humidifier valves shall be provided with spring return actuators to fail closed.

J. BAS Points Available At Operator Interface:

1. Inputs

Tag Name	Point Description
OATemp	Outside Air Temperature
OAHumd	Outside Air Humidity
SAHumd	Supply Air Humidity
RmHumd	Print Shop Space Humidity
PreHtCoilTemp	Pre-Heat Coil Temperature
SATemp	Supply Air Temperature
FltrDPSw	Filter Status
SFanStat	Supply Fan Status
OADmpStat	Outside Air Damper Status
LowTempS w	Low Temperature Switch
PrsS wLo	Pressure Switch Low
PrsSwHi	Pressure Switch High
EFanStat	Exhaust Fan Status (EF-2)
EFanPrsSwHi	EF-2 Pressure Switch High
EADmpStat	Exhaust Air Damper Status
RmTemp	Print Shop Space Temperature

2. Outputs

Tag Name	Point Description
SFanSS	Supply Fan Start/Stop
EFanSS	EF-2 Start/Stop
OADmp	Outside Air Damper Open/Close
EADmp	Exhaust Air Damper Open/Close
PrHtVlv	Pre-Heat Valve modulation
ClngVlv	Cooling Valve modulation
ReHtV!v	Re-Heat Valve modulation

HumdCntrl	Steam Humidifier Valve modulation

K. Alarms

1. Supply fan fail.
2. Freezestat (low temperature switch alarm).
3. Low suction fan intake pressure switch.
4. High fan discharge pressure switch.
5. Dirty or clogged filter.
6. All temperature high /low.
7. All humidity high/low.
8. Fan Failure.
9. Chilled water flow failure.

1.8 BLOWER COIL UNITS, (FC-1, 2, 3 & 4)

A. General:

1. Service: Blower Coil Unit FC-1, 2, 3, 4.
2. A space thermostat shall control each Blower/Fan Coil Unit (FC). The room thermostats shall communicate to the base building BAS utilizing BACnet interface for point monitoring and alarm annunciation. A current sensing switch shall be provided for each FC to monitor fan status.

B. System Off:

1. When the Blower Coil unit is indexed "Off' the supply fan shall be "Off' and the cooling coil valve shall be closed.

C. System Start:

1. The FC shall be started based upon a start time optimization program, time of day schedule, or manual command.
2. When the FC is indexed to operate, the fan shall start.

D. System Run:

1. Occupied Mode:
   a. The supply fan shall run continuously.
   b. Cooling coil valve shall modulate the chilled water valve to maintain the space temperature at setpoint.

E. System Stop:

1. When the FC is indexed to shut down, the supply fan shall stop and the chilled water valve shall close.

F. Safeties & Alarms:

1. Temperature Alarms: Annunciate temperature alarms to the BAS if the high or low analog limits are exceeded.
2. Leak Alarms: Annunciate leak alarms to the BAS if water is detected in the drip pan.
3. Filter Condition: Monitor differential pressures across filter and annunciate alarm when differential pressure set point is exceeded.
4. Annunciate off alarms whenever supply fan status does not equal start command.
5. Emergency Shutdown:
6. Duct smoke detector(s) shall stop the fan and annunciate an alarm when products of combustion are detected in the air stream. The duct smoke detectors shall be wired into the building fire alarm system.
7. The fan shall be interlocked to shut down upon a command from the building fire alarm system. Control valves shall be indexed to their "System Off' conditions.

G. BAS Points Available At Operator Interface:

1. Inputs

Tag Name	Point Description
SFanStat	Fan Status
FanCoilAlm	Blower Coil Common Alarm
FltrDPAlm	Filter Status
ChWLeakAlm	Chilled Water Leak Alarm
RmTemp	Space Temperature

2. Outputs

Tag Name	Point Description
FanSS	Supply Fan Start/Stop
ClngVlv	Cooling Valve modulation

H. Alarms

1. FC Unit Common Alarm.
2. Dirty filter.
3. Space temperature high /low.

4. Water detected.

1.9 EXHAUST FAN (EF-2)

A. System Off

1. When EF-2 is indexed "Off" the exhaust fan is "Off.

B. System Start

1. The EF-2 shall be started through the BAS based upon a start time optimization program, interlock to AHU-1, time of day schedule or manual command.
2. When the EF-2 is indexed to operate, the exhaust air damper, smoke dampers and fire/smoke dampers shall open. The Exhaut Air Damper end switch (EADmpStat) shall prove damper status as "Open" prior to fan start. Where required, hard-wired smoke and/or fire/smoke damper end switches shall prove damper open status prior to fan start.

C. System Run:

1. Exhaust Fan EF-2 shall run continuously and the Exhaut Air Damper shally be full open.

D. System Stop:

1. When the fan is indexed to shut down, the exhaust fan shall stop and the Exhaust Air Damper shall be indexed to the "System Off' condition.

E. Safeties & Alarms:

1. A high discharge pressure switch shall stop the fan when duct pressure exceeds design and annunciate an alarm. Dampers shall be indexed to their "System Off' conditions. The fans shall remain off until the pressure switch is manually reset.

F. Emergency Shutdown

1. Duct smoke detector(s) shall stop the fan and annunciate an alarm when products of combustion are detected in the air stream. The duct smoke detectors shall be wired into the building fire alarm system.
2. The fan shall be interlocked to shut down upon a command from the building fire alarm system. Dampers and control valves shall be indexed to their "System Off' conditions.

G. Failure Modes:

1. If the exhaust fan fails to operate an alarm shall be annunciated at the BAS. Dampers shall be indexed to their "System Off' conditions.
2. The Exhaust Air Damper shall be provided with a spring return actuator to fail to their "System Off' position.

H. BAS Points Available At Operator Interface:

1. Inputs

Tag Name	Point Description
EFanStat	Exhaust Fan Status
EADmpStat	Exhaust Air Damper End Switch
EFanPrsSwHi	Exhaust Fan High Pressure Switch

2. Outputs

Tag Name	Point Description
EFanSS	Exhaust Fan Start/Stop
EADmp	Exhaust air damper Open/Close

I. Alarms

1. Exhaust fan fail Alarm
2. High fan discharge pressure switch

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 23 09 93

SECTION 23 21 16 - HYDRONIC PIPING SPECIALTIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum and (5) the Contract [City of New York Standard Construction Contract].

1.2 SUMMARY

A. Provide hydronic specialties specified herein, shown on the Drawing Schedules and needed for a complete and proper installation. The types of hydronic specialties specified in this Section include: manual balancing valves, vent valves, flow control check valves, air separators, bladder/diaphragm expansion tanks, pump suction diffusers, pump discharge combination valves, water relief valves, pressure reducing valves, differential pressure regulating valves, manual water flow control valves, thermostatic water valves (self-contained), make-up water feeders, and pressure switches.

B. Hydronic specialties furnished as part of factory-fabricated equipment are specified as part of the equipment assembly in other Division-23 Sections.

C. Section includes:
1. Balancing Valves
2. Flow Control Valves
3. Water Relief Valves
4. Water Flow Rate Control

1.3 RELATED SECTIONS

A. Section 23 05 00 - COMMON WORK RESULTS FOR HVAC

B. Section 23 05 19 - METERS AND GAGES FOR HVAC PIPING

C. Section 23 05 23 - GENERAL DUTY VALVES FOR HVAC PIPING

D. Section 23 05 53 - IDENTIFICATION FOR HVAC PIPING AND EQUIPMENT

E. Section 23 07 19 - HVAC PIPING INSULATION

1.4 SUBMITTAL PROCEDURES

A. Refer to DDC General Conditions Section 01 33 00 “Submittal Procedures”.

B. Product Data: Include flow and pressure drop curve or chart for each type and size of hydronic specialty. For the water flow control valve and balancing valves, incorporate a calibrated chart and the computed flow rates based on the equipment actually installed; these rates shall be indicated on a flow diagram, which shall be submitted for approval.

C. Shop Drawings: Submit schedule indicating manufacturer's figure number, size, location, capacities, and features for each hydronic specialty.

D. Maintenance data
   1. Maintenance manuals

1.5 QUALITY ASSURANCE

A. Refer to DDC General Conditions Section 01 40 00 “Quality Requirements”.

B. Codes and Standards: ASME Compliance: Manufacture and install hydronic specialties in accordance with ASME B31.9: Building Services Piping.

PART 2 - PRODUCTS

2.1 MATERIALS AND MANUFACTURERS

A. Provide factory-fabricated hydronic specialties recommended by the manufacturer for use in service indicated. Provide hydronic specialties of types and pressure ratings indicated for each service, or if not indicated, provide proper selection as determined by the Commissioner to comply with installation requirements. Provide sizes and connections that properly mate with pipe, tube and equipment connections.

B. Balancing Valves with Read-out Ports
   1. Where the Drawings indicate a balancing valve in the water piping, provide a combination shut-off and balancing valve with read-out ports of heavy brass, bronze or dezincification-resistant copper alloy construction up to 2" and cast-iron or ductile-iron construction 2½" and above, with visible graduated dial indicator and read-out ports built for a working water pressure of 250 psig at 250oF. Valve shall be globe or ball type. Valve shall be complete with a locking mechanism that can be set at a balance point, so that the valve may be opened and closed, but not opened beyond the pre-set balance point.
   2. Manufacturers
      a. Anvil International/Gruvlok.
      b. Armstrong Pumps, Inc.
      c. Bell & Gossett ITT; Fluid Handling Div.
      d. Griswold Controls.
      e. Victaulic/Tour & Andersson, Inc.
      f. Wheatley HVAC Products.
      g. Macon Balancing/Tunstall Corporation.
      h. Grinnell Mechanical Products by Tyco.

i. NIBCO Inc.
j. Watts Regulator Co.
k. Nexus.
l. Oventrop Corporation.
m. Val-Matic Valve & Manufacturing Corporation.
n. Or approved equal.

C. Flow Control Valves (Check Valves)
1. Provide flow control valves pressure rated for 125 psi, containing lift check assembly which will automatically open by means of pump flow pressure, and automatically close when pump is not operating. Provide with means to manually open in case of pump failure.
a. Threaded Ends 2½" and Smaller: cast-iron body, bronze check mechanism, screw-in bonnet, straight or angle pattern.
b. Soldered Ends 4" and Smaller: cast-bronze body, bronze check mechanism, screw-in bonnet, straight or angle pattern.
c. Flanged Ends 3" and Larger: cast-iron body, bronze check mechanism, screw-in bonnet, straight or angle pattern.
2. Manufacturers
a. Armstrong Pumps, Inc.
b. Bell & Gossett ITT; Fluid Handling Div.
c. MEPCO (Dunham-Bush, Inc).
d. Taco, Inc.
e. Wheatley HVAC Products.
f. Or approved equal.

D. Water Relief Valves
1. Provide water relief valves, of size and capacity for proper relieving, in accordance with ASME Boiler and Pressure Vessel Code.
a. Iron body with non-ferrous internal parts, ASME rated, gradually relieving, not "pop" type.
2. Manufacturers
a. Amtrol, Inc.
b. Armstrong Pumps, Inc.
c. Bell & Gossett ITT; Fluid Handling Div.
d. Spirax Sarco.
e. Watts Regulator Co.
f. Wheatley HVAC Products.
g. Conbraco Industries, Inc.
h. Watson McDaniel.
i. Or approved equal.

E. Water Flow Rate Control
1. Provide a means of manual water flow rate control at each location so indicated on the Drawings.
a. For pipe size up to and including 3", provide a valve having an integral pointer to indicate degree of valve opening and having tapping for connecting a portable differential meter. A calibrated chart shall be used for determining the flow rate. Valve shall be of bronze body/brass ball or globe construction with glass and carbon filled TFE seat rings.

b. For pipe sizes over 3", provide a nickel plated orifice insert having tapping for connecting a portable differential meter. Insert shall be calibrated, and furnished with a nameplate showing capacity curve. Valve of cast-iron or steel construction with flanged or grooved connections having tapping for connecting a portable differential meter shall be acceptable. Valve shall be calibrated, and furnished with a nameplate showing capacity curve.
c. The water flow rates indicated on the drawings are based on the use of heating/cooling equipment of the capacity indicated in the tables on the Drawings. Compute the water flow rates required for the equipment actually installed and to set each water flow rate control accordingly.

2. Manufacturers
a. Bell & Gossett ITT; Fluid Handling Div.
b. Wheatley HVAC Products.
c. Tour & Andersson Inc.
d. Macon Balancing/Tunstall Corporation
e. Nexus.
f. Or approved equal.

PART 3 - EXECUTION

3.1 EXECUTION REQUIREMENTS

A. Refer to DDC General Conditions for execution requirements.

3.2 SUPPLEMENTAL INSTALLATION

A. Balancing Valves: Install balancing valves where shown on the Drawings. After hydronic system balancing has been completed, mark each balancing valve with stripe of yellow lacquer across body and stop plate to permanently mark final balanced position.

B. Flow Control Check Valves: Install flow control valves on discharge of each pump servicing hydronic system or zone, and elsewhere as indicated on the Drawings. Install with check mechanism in upright position, with adequate clearance of service and replacement. Screw check down for automatic operation.

C. Water Relief Valves: Install on hot water converters, and elsewhere as indicated on the Drawings. Pipe discharge to floor drain. Comply with ASME Boiler and Pressure Vessel Code.

D. Manual Water Flow Rate Control: Install at each location as shown on the Drawings. For pipe sizes over 3", Insert shall be installed with gaskets between standard ASA pipe flanges. A globe valve furnished with square operating nut shall be provided in the piping on the discharge side of the insert at a minimum distance of 12".

END OF SECTION 23 21 16

SECTION 23 22 13 STEAM AND CONDENSATE HEATING PIPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum and (5) the Contract [City of New York Standard Construction Contract].

1.2 SUMMARY:

A. Provide pipes, pipe fittings, pipe specialties, and pipe supports as shown on the Drawings, and as needed for a complete and proper installation. Product specific requirements are contained herein.

B. Section includes:

1. Steam and Condensate Piping

SYSTEM	HIGH PRESS.	LOW PRESS.& PUMPED COND.
Operating Pressure	Over 16 psig	0-15 psig
Operating Temp.	Over 251°F.	212°F to 250°F
Design Code		
(ANSI)	B31.1	B31.9

2. Heating Hot Water Piping
   a. Operating Pressure 125 psig
   b. Operating Temperature 150o – 250°F
   c. Design Code (ANSI) B31.9

1.3 RELATED SECTIONS

A. 23 05 00- COMMON WORK RESULTS FOR HVAC

B. 23 05 19- METERS AND GAGES FOR PIPING

C. 23 05 23- GENERAL DUTY VALVES FOR HVAC PIPING

D. 23 05 53- IDENTIFICATION FOR HVAC PIPING AND EQUIPMENT

E. 23 07 19- HVAC PIPING INSULATION

F. 23 22 16- STEAM AND CONDENSATE PIPING SPECIALTIES

1.4 SUBMITTAL PROCEDURES

A. Refer to DDC General Conditions Section 01 33 00 “Submittal Procedures” for all submittals.

1.5 SUBMITTALS

A. Product Data - Provide product data for the following:
   1. Piping and Fittings
   2. Piping Specialties
   3. Expansion compensation devices
   4. Hangers and Supports

B. Shop Drawings
   1. Provide shop drawings of all HVAC lines, including, but not limited to, showing all diameters, pitch, cleanouts, traps, routings, terminations, shut-off valves, vents, riser drains, etc.

C. Schedules
   1. Submit schedule showing pipe or tube weight, fitting and joint type for each piping system; size, location and feature for each piping specialty, expansion compensation, hanger and support.

D. Certifications
   1. Welding Certifications: Submit reports as required for piping work.
   2. Brazing Certifications: Submit reports as required for piping work.

1.6 QUALITY ASSURANCE

A. Refer to DDC General Conditions Section 01 40 00 “Quality Requirements”.

B. Codes and Standards
   1. Welding: Qualify welding procedures, welders and operators in accordance with ASME B31.1, or ASME B31.9, as applicable, for shop and project site welding of piping work and ASME Boiler and Pressure Vessel Code, Section IX, Part QW Welding or in accordance with AWS B2.1 Specifications for Welding Procedure and Performance Qualification per Section MC 1203.3.6 of the 2014 NYC Mechanical Code.
   2. Certify welding of piping work using Standard Procedure Specifications by, and welders tested under supervision of, National Certified Pipe Welding Bureau (NCPWB).
   3. Brazing: Certify brazing procedures, brazers, and operations in accordance with ASME Boiler and Pressure Vessel Code, Section IX, Part QB Brazing for shop and job-site brazing of piping work or in accordance with AWS B2.2 standard for Brazing Procedure and Performance Qualification per Section MC 1203.3.1.
   4. Fluid Control Institute (FCI) Compliance: Test and rate "Y" type strainers in accordance with FCI 73 1: Pressure Rating Standard for "Y" Type Strainers. Test and rate other type strainers in accordance with FCI 78-1: Pressure Rating Standard for Pipeline Strainers Other than "Y" Type.

5. EJMA Compliance: Construct expansion compensation products in accordance with standards of the Expansion Joint Manufacturer's Association (EJMA).
6. Manufacturers Standardization Society of the Valve and Fittings Industry (MSS) Compliance: Comply with:
   a. MSS SP-58 Pipe Hangers and Supports - Materials, Design and Manufacture
   b. MSS SP-69 Pipe Hangers and Supports - Selection and Application
   c. MSS SP-89 Pipe Hangers and Supports - Fabrication and Installation Practices
   d. Piping shall be supported at distances not exceeding the spacing specified in MC Table 305.4 or in accordance with the above MSS standards.
7. Comply with ANSI B31.1A, ASME Code for pressure Piping, and ASHRAE Equipment Guide.
8. New York City Construction Codes: Comply with the 2014 New York City Building Code, Mechanical Code, Fuel Gas Code, Plumbing Code and Fire Code.
9. Testing of material shall be in accordance with Section §28-113 of the NYC Administrative Code (reference Section MC 301.5). Whenever the NYC Construction Codes or the Rules of the Department of Buildings requires that material be listed or labeled and material proposed to be used is not so listed or labeled, the use of such material shall be subject to prior approval by the Commissioner and such material shall be used only to the extent set forth in such approval.

PART 2 - PRODUCTS

2.1 MATERIALS AND MANUFACTURERS

A. Pipe used shall be free from scale or rust. Each length of pipe shall be properly marked at the mill for proper identification with name or symbol of manufacturer. Dimensions for steel pipe shall be in accordance with the ANSI B36.10. Dimensions for red brass pipe shall be in accordance with ASTM B251.

B. Steel Pipe
   1. Black or Galvanized; Standard Weight: Schedule 40 or Extra Heavy Weight: Schedule 80; ASTM A135 or ASTM A53 or ASTM A106, however fuel oil lines and diesel oil lines for equipment or tanks above the level of the lowest floor shall only be seamless black steel pipe ASTM A53 Grade B, Type S or ASTM A106, Grade B, Schedule 40 with welded connections up to the oil tank or equipment except that fittings at the tank or equipment, shut-off valves and other fuel oil flow and control devices may be screwed or flanged per Section MC 1305.9.5.
   2. Steel Pipe for Threading: ASTM A53 Type F, Type E or S; ASTM A135 or A106.
   3. Flanging: ASTM A53, Type E or S; ASTM A135 or ASTM A106. (Type F not permitted for flanging).
   4. Bending and Coiling: ASTM A53, Type F, Type E or S; ASTM A135 or ASTM A106.
   5. Grooved End Type: Schedule 40, ASTM A53, Type F, Type E or S; or ASTM A135 or ASTM A106.
   6. Manufacturers:
      a. Koppel Steel Corp.
      b. North Star Steel Co.
      c. Sawhill Tubular Co.
      d. Sharon Tube Co.
      e. U.S. Steel Co.
      f. Wheatland Tube Company.

g. EXLTUBE Inc.
h. Or approved equal.

C. Brass Pipe
1. Semi-annealed seamless drawn; ASTM B43; 84 and 86% copper.
2. Manufacturers:
a. Anvil International.
b. Mueller Industries.
c. Phelps-Dodge Copper Products Corp.
d. Revere Copper & Brass, Inc.
e. Merit Brass Company.
f. Trenton Pipe Nipple Company.
g. Or approved equal.

D. Copper Tubing
1. Hard-Drawn Temper; Water tubes shall be Type L or K per ASTM B88; Refrigerant lines shall be ACR tube per ASTM B280. Oil lines other than steel may be provided. If provided, lines shall be in accordance with MC Table 1302.3. Oil copper or copper-alloy tubing shall be Type K or Type L PVC Coated per ASTM B75; ASTM B88; ASTM B280.
2. Manufacturers:
a. Mueller Industries.
b. NIBCO Inc.
c. Phelps-Dodge Copper Products Corp.
d. Revere Copper and Brass Inc.
e. Or approved equal.

E. Ductile Iron Pipe
1. Ductile iron pipe shall have an outer coating of coal tar and shall comply with the requirements of the latest Standard Specifications of ANSI A21.51 and AWWA C151; AWWA C115.
2. Thickness class of pipe shall be as follows: Water Service piping: thickness class 52 for 3” & 4” diameter pipe and thickness class 56 for pipe size greater than 4”.
3. Ductile iron pipe shall also comply with the following requirements:
4. Marking: the weight and class and other designated markings required by ANSI specifications shall be stenciled at the foundry on all ductile iron pipe, fittings and specials.
5. Markings shall be painted conspicuously in white on the outside of each pipe length, fitting and special casting after the shop coat has hardened.
6. Cement Lining: Pipe shall be cement lined in accordance with ANSI, Standard A21.24, with thickness of lining to be 1/8" minimum. A plus tolerance of 1/8" shall be permitted on all sizes of pipe.
7. Manufacturers:
a. U.S. Pipe and Foundry
b. American Cast Iron Foundry
c. Amstead Industries
d. Or approved equal.

2.2 FITTINGS

A. Steel, Malleable/Cast Iron
   1. Steel Fittings, except couplings and unions, 21/2" and less: Threaded pattern, standard weight, black cast iron, suitable for a working steam pressure of 125 psi, except as otherwise specified below.
   2. Flanges, Welding Neck Type, Same Pressure Rating as Adjoining Pipe: ANSI/ASME B16.5. Welding flanges shall be socket type.
   3. Weld Fittings, Carbon Steel;
   4. Butt Welding Type: ANSI/ASME B16.9
   5. Socket Welding Type: ANSI/ASME B16.11;
   6. Manufacturers:
      a. Anvil International.
      b. CIFUNSA Marketing, Inc.
      c. Smith-Cooper International.
      d. Tube-Line.
      e. Victaulic Co. of America.
      f. Ward Manufacturing.
      g. Weldbend Corporation.
      h. TYCO Grinnell Mechanical Products.
      i. Shurjoint Piping Products.
      j. The Viking Corporation.
      k. Or approved equal.

B. Brass
   1. Malleable brass, threaded pattern; flanges, brass for use in brass pipe or copper tubing systems: Flanges shall conform to the Standards for fittings used in the systems. Brazing Flanges, with or without Pre-inserted Rings of Brazing Alloy: ASME B16.15, with hubs modified for brazing ends. Brass fittings shall conform to ASTM F1974 per MC Table 1202.5.
   2. Manufacturers:
      a. Anvil International.
      b. Elkhart Products Corp.
      c. Lee Brass/S. G. Flagg Co.
      d. Mueller Industries.
      e. NIBCO Inc.
      f. Smith-Cooper International.
      g. Or approved equal.

C. Unions 3" Size and Under: Steel: malleable iron, 300 lb class, with brass to iron or brass to brass seats and bronze to bronze, bronze to iron, or brass to iron ground joint, except as otherwise specified. The pressure rating shall be indicated on the union.
   1. Unions for Use in Brass Pipe or Copper Tubing Systems, 2" and under: Cast bronze, 150 lb Class, with bronze to bronze seats; with screw, brazing or solder ends, or with adapters as required.
   2. Manufacturers:
      a. Anvil International.
      b. E.M. Dart Co.
      c. NIBCO Inc.
      d. Smith-Cooper International.

e. Weldbend Corporation.
f. Ward Manufacturing LLC.
g. The Viking Corporation.
h. Or approved equal.

D. Fittings for Type "L" copper tubing
1. Fittings shall be wrought copper solder joint fittings suitable for brazing and shall be in accordance with ANSI B16.22. Type "L" fittings shall have a minimum working water pressure of 150 p.s.i.
2. Flux for brazing Type L shall be equal to "Handy Flux".
3. The silver brazing alloy for brazed Type L joints shall be similar to Handy & Harmon Sil-Fos brazing alloy having a silver content of not less than 15% and a flow point of 1300oF
4. Alternately, fittings for Type "L" copper tubing may be cast bronze threaded fittings, Class 125 working steam pressure, conforming to ASTM B62 and ASME B16.24.
5. Alternately, hydronic fittings for cold and hot water piping and chilled water piping may be press fittings (press fit - pressure-sealed joints) up to and including 4" in diameter. O-rings: EPDM; Special Tools recommended and approved by the Manufacturer.
6. Manufacturers:
a. Viega ProPress
b. Elkhart Xpress
c. NIBCO Press System
d. Grinnell G-Press.
e. Victaulic Co.
f. Anvil International
g. TYCO Grinnell Mechanical Products
h. Shurjoint Piping Products
i. Or approved equal.

E. Mechanically formed tee-branch outlets (refer to Section MC 1203.3.8) may be used on aboveground copper tubing. All joints formed in this manner shall be brazed in compliance with Section MC 1203.3.8.2 and manufacturer's recommendations. Soft soldered joints shall not be permitted.

F. Couplings: Same material and pressure rating as adjoining pipe, conforming to standards for fittings in such pipe. Use taper tapped threaded type in screwed pipe systems operating in excess of 15 psig.

G. Nipples: same material and strength as adjoining pipe, except nipples having a length of less than 1" between threads shall be extra heavy Schedule 80.
1. Manufacturers:
a. Allied Piping Products.
b. Babcock & Wilcox.
c. Crane Co.
d. Tube Turns.
e. Smith-Cooper International.
f. Anvil International.
g. Or approved equal.

2.3 FLEXIBLE CONNECTIONS

A. Corrugated inner tube and outer shield of wire braid: Stainless steel. Maximum working pressure at room temperature: 850oF and pressure safety factor of 4:1.

B. Corrugated inner tube and outer shield of wire braid: Bronze. Maximum working pressure at room temperature up to 150oF.

C. Flexible metal connectors and hoses used in fuel oil system where rigid connections are impractical or to reduce the effect of jarring and vibration shall be listed and labeled in accordance with UL 536 and shall be installed in compliance with its label and the manufacturer's installation instructions and shall not exceed 18". Connectors made from combustible materials shall not be used inside buildings or above ground outside of buildings.

D. Manufacturers:
1. Allied Metal Hose Inc.
2. Flexaust Co.
3. Flex-Hose Co., Inc.
4. Mason Industries (Type BSS).
5. Metraflex Co.
6. Wheatley Pump & Valve Inc.
7. Anvil International.
8. Or approved equal.

2.4 GALVANIZING

A. Galvanizing Pipe and Fittings: hot dip process, inside and out in accordance with ASTM or other nationally recognized specifications to which pipe and fittings conform. Galvanize before threading.

2.5 JOINING AND SEALANT MATERIALS

A. Solder: solid wire type conforming to type 2: 95-5.

B. Gasket Material
1. For Use with Cold Water or Chilled Water: 1/16" thick rubber.
2. For Use with Hot Water, Air or Steam or Oil: Waterproofed non-asbestos mineral, or ceramic fiber, or spirally wound stainless steel V-shaped strip with non-asbestos filler and an outer steel compression ring, designed for the temperatures and pressures of the piping systems. Mechanical joints utilizing an elastomeric and/or compression seal are not permitted per Section MC 1303.3.2. Fuel oil piping flanged joints requiring gaskets or packing shall be equipped with gaskets rated for a minimum of 750°F per Section MC 1303.1.

C. Bolts and Nuts: heat treated carbon steel, ASTM A183 minimum tensile 110,000 psi.

D. Per Section MC 1303.3, joints and connections shall be approved and of a type approved for fuel-oil and diesel oil piping systems as follows:

1. Brazed in accordance with ASME Boiler and Pressure Vessel Code, Section IX Welding and Brazing Qualifications or in accordance with American Welding Society AWS B2.2 Standard for Brazing Procedure and Performance Qualification or
2. Threaded in accordance with ASME B1.20.1 or
3. Welded in accordance with ASME Boiler and Pressure Vessel Code, Section IX Welding and Brazing Qualifications or in accordance with AWS B2.1 Specifications for Welding Procedure and Performance Qualification or
4. Flanged with gaskets rated for a minimum of 750°F per Section MC 1303.1

E. All threaded joints and connections shall be made tight with suitable lubricant or pipe compound. Pipe joint compounds and thread seal tape that utilize Teflon (PTFE) shall be approved for usage on fuel oil and diesel oil lines.

2.6 PIPING SPECIALTIES

A. Provide factory-fabricated piping specialties recommended by manufacturer for use in service indicated.
   1. Pipe Escutcheons
      a. Provide pipe escutcheons as specified herein with inside diameter closely fitting pipe outside diameter or outside of pipe insulation where pipe is insulated. Select outside diameter of escutcheon to completely cover pipe penetration hole in floors, walls, or ceilings; and pipe sleeve extension, if any. Provide pipe escutcheons with nickel or chrome finish for occupied areas, prime paint finish for unoccupied areas.
      b. Pipe Escutcheons for Moist Areas: For waterproof floors and areas, where water and condensation can be expected to accumulate, provide cast brass or sheet brass escutcheons, solid or split hinged. If exposed to view, escutcheon shall be solid type.
      c. Pipe Escutcheons for Dry Areas: Provide sheet steel escutcheons, solid or split hinged. If exposed to view, escutcheon shall be solid type.
      d. Manufacturers:
         1) Zurn Industries, Inc.
         2) McGuire Mfg. Co.
         3) Mueller.
         4) Or approved equal.

B. Strainers: Low Pressure Y-Type Pipeline Strainers:
   1. Provide strainers full line size of connecting piping with ends matching piping system materials. Select strainers for 125 psi working pressure with perforated stainless-steel basket with 50 percent free area. Perforation or mesh size shall depend on strainer size and/or material being strained.
   2. Threaded Ends, 21/2" and Smaller: Bronze or Cast-iron body, screwed screen retainer with centered blow down fitted with pipe plug.
   3. Flanged Ends, 3" and Larger: Cast-iron body, bolted screen retainer with off-center blow down fitted with pipe plug.
   4. Butt Welded Ends, 3" and Larger: Schedule 40 cast carbon steel body, bolted screen retainer with off-center blow down fitted with pipe plug.
   5. Manufacturers:
      a. Anvil International.
      b. Armstrong Machine Works.

c. Conbraco Industries, Inc.; Apollo Valves.
d. Hoffman Specialty ITT; Fluid Handling Div.
e. O.C. Keckley Company.
f. Metraflex Co.
g. Victaulic Co. of America.
h. TYCO Grinnell Mechanical Products.
i. Shurjoint Piping Products.
j. Spirax Sarco.
k. Mueller Steam Specialty.
l. Or approved equal.

C. Dielectric Unions
1. Provide products which effectively isolate ferrous from non-ferrous piping (electrical conductance), prevent galvanic action, and stop corrosion. Per Sections MC 1203.1.1 and 1303.1.1 joints between different metallic piping materials shall be made with approved dielectric fittings or brass converter fittings.
2. Manufacturers:
a. Mueller Industries.
b. Capitol Mfg. Co.; Div. of Harsco Corp.
c. Eclipse, Inc.
d. Epco Sales, Inc.
e. Perfection Corp.
f. Or approved equal.

D. Pipe Sleeves: Provide pipe sleeves of one of the following. Pipe sleeve must be one of the following appropriate types and thickness as specified below unless otherwise noted in the UL firestopping assembly details in which case type and thickness shall be as indicated in the UL details.
1. Sheet-Metal: Fabricate from galvanized sheet metal; round tube closed with snaplock joint, welded spiral seams, or welded longitudinal joint. Fabricate from the following gauges: 3" and smaller, 20 gage minimum; 4" to 6", 16 gage; over 6", 14 gage minimum.
2. Steel-Pipe: Fabricate from Schedule 40 galvanized steel pipe; remove burrs.
3. Firestop penetration materials for sealing sleeves shall be listed by Underwriters Laboratories. For pipes passing through fire-rated floor, cast-in place firestop device with Underwriters Laboratories listing is permitted as an acceptable sleeve alternative to a metallic sleeve with firestopping material. The cast-in place device is a one-step firestopping process that does not require additional firestop penetration materials for sealing the sleeves. The device shall be installed where required for sleeving purposes. The cast-in place firestop device shall not be used for wall applications.
4. Materials for sealing space between each pipe and sleeve through non-rated interior walls shall consist of mineral wool and sealant.

E. Mechanical Sleeve Seals
1. Modular mechanical type consisting of interlocking synthetic rubber links shaped to continuously fill annular space between pipe and sleeve, connected with bolts and pressure plates which cause rubber sealing elements to expand when tightened, providing watertight seal and electrical insulation.
2. Provide mechanical sleeve seals for sleeves located in foundation walls below grade, or in exterior walls.

3. Manufacturers:
   a. Thunderline Corp.; Link Seal Type "C"
   b. Metraflex Co; MetraSeal.
   c. Mason
   d. Or approved equal.

F. Drip Pans: Fabricated from corrosion-resistant sheet metal with watertight joints, and with edges turned up 21/2". Reinforce top, either by structural angles or by rolling top over 1/4" steel rod. Provide hole, gasket, and flange at low point for watertight joint and 1" drain line connection.

2.7 EXPANSION COMPENSATION

A. Provide packless expansion joints where indicated on the Drawings and required for piping systems, with materials and pressure/temperature ratings selected to suit intended service. Select packless expansion joints to provide 200% absorption capacity of piping expansion between anchors.

B. Expansion Compensators
1. Pressure rated for 60 psi for low pressure systems, 175 psi for high pressure systems. Multiple phosphor bronze bellows, brass shrouds and end fittings for copper piping systems, or multiple stainless steel bellows, carbon steel shrouds and end fittings for steel piping systems. Provide internal guides and anti-torque device, and removable end clip for proper positioning.
2. Joints for water systems shall be reinforced rubber corrugations secured by steel flanges. The number of corrugations shall be determined by the amount of movement required.
3. Joints for steam or higher temperature fluids shall be composed of multiple layers of thin stainless steel, corrugated and mounted between flanges. The number of corrugations shall be selected for the movement involved.
4. Manufacturers:
   a. Flex-Hose Co., Inc.
   b. Flexonics Div.; UOP, Inc.
   c. Mason Industries.
   d. Metraflex Co.
   e. Victaulic Co. of America.
   f. Vibration Mountings and Controls, Inc.
   g. Or approved equal.

C. Rubber Expansion Joints
1. Construct of butyl rubber with full-faced integral flanges, internally reinforced with steel retaining rings. Provide steel retaining rings over entire surface of flanges, drilled to match flange bolt holes, and provide external control rods.
2. Manufacturer:
   a. Garlock; Mechanical Packing Div.
   b. Metraflex Co.
   c. Vibration Mountings and Controls, Inc.
   d. Or approved equal.

D. Expansion joints provided in grooved end steel piping water systems shall be packless, gasketed, slip-type with grooved end telescoping slip-pipe section providing up to 3” axial end movement. Install expansion

joints adjacent to an anchor or between guides, or expansion joints or approved equal consisting of a combination of flexible couplings and grooved end nipples joined in tandem to provide increased expansion. Water systems shall be rated for 250°F in accordance with manufacturer's recommendations for expansion compensation.

1. Manufacturers:
   a. Shurjoint Models 650/651.
   b. Anvil GRUVLOK Fig. 7240.
   c. Victaulic Style 150.
   d. Tyco Grinnell Figure 7550.
   e. Victaulic Style 155.
   f. Or approved equal..

2.8 SLIP JOINTS

A. Provide slip joints where indicated on the Drawings and required for piping systems, with materials and pressure/ temperature ratings selected to suit intended service. Select slip joints to provide 200% absorption capacity of piping expansion between anchors. Slip shall be the type designed for repacking under pressure, with drip connections for steam piping systems and ends to mate with piping system.

B. Manufacturers:
   1. Flex-Hose Co., Inc.
   2. Flexonics Div; UOP, Inc.
   3. Metraflex Co.
   4. Or approved equal.

2.9 PIPE ALIGNMENT GUIDES

A. Provide pipe alignment guides on both sides of loops, elsewhere as required and as indicated on the Drawings. Construct with 4 fingers spider traveling inside guiding sleeve with provision for anchoring sleeve to structural steel. The pipe alignment guide spider, housing, and base must be constructed of carbon steel (painted for rust protection).

B. Manufacturers:
   1. Anvil International
   2. Flex-Hose Co., Inc.
   3. Hyspan Precision Products, Inc.
   4. Metraflex Co.
   5. Or approved equal.

2.10 HANGERS AND SUPPORTS

A. General
   1. Insulated Piping: Each pipe hanger supporting insulated piping shall be provided with a pipe covering protection shield.

2. Hangers for pipes smaller than 5" shall be forged or malleable iron ring type or steel clevis type supported by a solid steel rod.
3. Sockets used on upper ends of rods at beam clamps and on lower ends of rods for single hangers shall be malleable or forged steel with standard machine threads.
4. Supports for vertical piping shall be double bolt riser clamps, with each end having equal bearing on the building structure located as hereinafter specified. If piping is insulated, riser clamp shall be placed under insulation.
5. Trapeze type hangers shall be made of 2"x2"x1/4" carbon steel angle iron with drilled holes and 1/2" hanger rods. In lieu of an angle iron, a strut assembly may also be used for the trapeze style hanger supports.

B. Manufacturers:
1. Anvil International, MSS SP 69 Type 8
2. Cooper B-Line, Inc.
3. Carpenter & Paterson, Inc.
4. F.& S. Central Mfg. Co.
5. Grabler Mfg. Co.
6. Empire Industries, Inc.
7. Or approved equal.

2.11 INSERTS AND EXPANSION BOLTS

A. Provide inserts for use in new conventional reinforced poured concrete slabs.

B. Manufacturers:
1. Carpenter & Paterson Inc. No. 650;
2. Anvil International Fig. 281.
3. C. H. Leibfried Mfg. Corp. No. 100.
4. Cooper B-Line, Inc. B2500 & N2500 Series.
5. Hilti, Inc. Cast-In Anchor HCI-WF
6. Or approved equal

C. Expansion bolts for use in new and existing reinforced concrete slabs and concrete deck shall be wedge-type zinc-coated fastener with pull-out, tension, and shear capacities appropriate for supported loads and building materials.

D. Manufacturers:
1. ITW Ramset/Red Head “Trubolt+”.
2. Hilti, Inc “Kwik Bolt 3”.
3. Powers Fasteners, Inc. “Power Stud+ SD2”.
4. Or approved equal.

E. Expansion Bolts installed in concrete shall be in accordance with Appendix D of ACI 318 as modified by Sections 1908.1.9 and 1908.1.10 as per Section BC 1912 of the 2014 NYC Building Code.

2.12 SADDLES AND SHIELDS

A. Except as otherwise indicated on the Drawings, provide saddles or shields under piping hangers and supports, factory-fabricated, for all insulated piping. Size saddles and shields for exact fit to mate with pipe insulation.
   1. Protection Saddles: MSS Type 39; fill interior voids with segments of insulation matching adjoining insulation.
   2. Protection Shields: MSS Type 40; of length recommended by the manufacturer to prevent crushing of insulation.
   3. Thermal Hanger Shields: Constructed of 360o insert of high density, 100 psi, waterproofed calcium silicate, encased in 360o sheet metal shield. Provide assembly of same thickness as adjoining insulation.

B. Manufacturers:
   1. Elcen Metal Products Co.
   2. Pipe Shields, Inc.
   3. Value Engineered Products, Inc.
   4. Or approved equal.

PART 3 - EXECUTION

3.1 EXECUTION REQUIREMENTS

A. Refer to DDC General Conditions for the requirements governing execution.

3.2 INSPECTION

A. Perform flexibility analysis of the final piping configuration as required by ANSI B31.1. Insure that the resultant stresses are within the limits for the respective pipe materials and that the resultant forces and moments imposed on the anchors and guides do not exceed the Joist and Truss Manufacturers stated limitations.

B. Upon completion of the flexibility analysis, notify the Commissioner of additional loops, anchors or guides required to adequately protect the piping system.

C. Examine areas and conditions under which all products are to be installed. Do not proceed with work until unsatisfactory conditions have been corrected in manner acceptable to the Commissioner.

3.3 PREPARATION

A. Proceed with installation of hangers, supports and anchors only after required building structural work has been completed. Correct inadequacies including proper placement of inserts, anchors and other building structural attachments.

B. Prior to installation of hangers, supports, anchors and associated work, Contractor shall meet at project site with testing agency representatives (if any), other trades requiring coordination, and the Commissioner for purpose of reviewing material selections and procedures.

3.4 PIPE INSTALLATION

A. Install pipes in accordance with recognized industry practices which will achieve permanently-leakproof piping systems, capable of performing each indicated service without piping failure. Align piping accurately at connections, within 1/16" misalignment tolerance. Comply with ANSI B31 Code for Pressure Piping.

B. Locate piping runs, except as otherwise indicated, vertically and horizontally (pitched to drain) and avoid diagonal runs wherever possible. Orient horizontal runs parallel with walls and column lines. Locate runs as shown or described by diagrams, details and notations. Run piping in shortest route which does not obstruct usable space or block access for servicing building and its equipment. Hold piping close to walls, overhead construction, columns and other structural and permanent-enclosure elements of building; limit clearance to 1/2" where furring is shown for enclosure or concealment of piping, but allow for insulation thickness, if any. Where possible, locate insulated piping for 1" clearance outside insulation. All piping in finished and occupied spaces shall be concealed from view by locating piping in column enclosures, in hollow wall construction or above suspended ceilings; do not encase horizontal runs in solid partitions, except as indicated on the Drawings.

C. Do not run piping through transformer vaults and other electrical or electronic equipment spaces and enclosures unless unavoidable. Install drip pan under piping that must be run through electrical spaces. Do not run piping in stairwells or elevator equipment rooms except for systems serving those spaces.

D. In the outlet from each equipment drain, provide a tee with a brass plug at one end to facilitate cleaning of drain. Additionally, provide a single "P" trap for proper operation of the unit.

E. Riser Casings: Unless otherwise indicated on the Drawings, all exposed risers, including the drop risers, shall be enclosed in casings extending from floor to a height of 7'-6" above floor. Riser casings shall be installed after the pipe insulation work is completed, inspected and approved. Casings shall be made of 24-gage galvanized sheet steel, with the upper end wired with 1/8" half hard wire. Each casing shall be fastened to the wall at the upper end with a metal band and round head screws. Seams shall be located at the rear of the casing.

3.5 INSTALLATION OF PIPE SYSTEM JOINTS

A. Provide joint of type indicated in each piping system.

B. Thread pipe in accordance with ASME B1.20.1; cut threads full and clean using sharp dies. Ream threaded ends to remove burrs and restore full inside diameter. Apply pipe joint compound, or pipe joint tape where recommended by pipe/fitting manufacturer, on male threads at each joint and tighten joint to leave not more than three threads exposed.

C. Weld pipe joints in accordance with recognized industry practice and as follows:

1. Weld pipe joints only when ambient temperature is above 0oF where possible.
2. Bevel pipe ends at a 37.5o angle where possible, smooth rough cuts, and clean to remove slag, metal particles and dirt.
3. Use pipe clamps or tack-weld joints with 1" long welds, 4 welds for pipe sizes to 10", 8 welds for pipe sizes 12" to 20".
4. Build up welds with stringer-bead pass, followed by hot pass, followed by cover or filler pass. Eliminate valleys at center and edges of each weld. Weld by procedures which will ensure elimination of unsound or unfused metal, cracks, oxidation, blow-holes and non-metallic inclusions.
5. Do not weld-out piping system imperfections by tack-welding procedures; refabricate to comply with requirements.
6. Weld high-pressure piping under Special Inspection as required by the NYC Building Code.

D. Brazed Joints: Joints in refrigerant piping shall be brazed. Flared compression A1 fittings may be used only at the terminal equipment connections. Soldered joints shall not be used in such refrigerating systems. Mechanical press fittings for refrigerant lines are not permitted. Oil lines shall use brazed Type K fittings. The outside of the copper tube and the inside of the fitting where brazing rod will be applied, shall be cleaned and burnished with fine crocus cloth until all dirt and oxide is removed. A light coat of non-corrosive brazing flux shall be applied to both pipe and fittings (Acid flux shall not be used). Joint shall be uniformly heated to proper brazing temperature and the brazing material shall be fed to the joint until a uniform line of brazing material appears around the pipe at the end of the fitting. Brazing shall be done only by mechanics that are qualified for brazing refrigerant piping.

E. Fittings for copper tubing for refrigerant use shall be wrought copper with brazed type ends as applicable. Forged brass fittings are also acceptable for this purpose. Fittings shall be suitable for working water pressure up to 250 psi. The use of cast brass fittings for this service will not be approved.

F. Solder copper tube-and-fitting joints in accordance with recognized industry practice. Cut tube ends squarely, ream to full inside diameter, and clean outside of tube ends and inside of fittings. Apply solder flux to joint areas of both tubes and fittings. Insert tube full depth into fitting, and solder in manner that will draw solder full depth and circumference of joint. Wipe excess solder from joint before it hardens.

G. The use of mechanical formed outlets on copper tubing instead of soldered joints is acceptable. (Refer to Section MC 1203.3.8). The maximum diameter of branches shall be 21/8”. Use appropriate tool designed for mechanical formed outlets on copper tubes. All mechanical formed tee fittings shall be brazed in accordance with the Copper Development Associations Copper Tube Handbook Using BCuP series filler metal. All mechanical formed branch collars shall be listed by UPC, and Underwriters Laboratory. They shall comply with ASME Code for pressure piping ANSI B31.5c.

H. Offsets in piping shall be accomplished by means of standard fittings; pipe bends shall not be used for this purpose unless shown on the Drawings or unless permission is obtained to use pipe bends.

I. Flanged Joints: match flanges within piping system, and at connections with valves and equipment. Clean flange faces and install gaskets. Tighten bolts to provide uniform compression of gaskets.

J. The "Y" fitting in the vacuum pump discharge piping and all fittings in the fuel oil piping within the building shall be of malleable iron.

K. Eccentric Fittings: reductions in sizes of steam mains and hot and/or chilled water mains shall be made with eccentric fittings. To avoid trapping of condensate or air in mains at eccentric reducers, install steam piping eccentric reducers with the offset to the bottom of the run, and install water piping eccentric reducers with the offset to the top of the run.

L. Reducing Fittings: except for welded piping, no fittings shall be taped for drip except in boss provided for that purpose. Reducing fittings shall be used where drips are required.

M. Unions shall be used in piping only adjacent to units of equipment such as pumps, oil burners, compressors, heating coils, cooling coils and all other items and accessories, or in other locations where specified, where shown on the Drawings, or where written permission is granted prior to installation.

N. Mechanical Couplings Type Fittings: The use of mechanical coupling type fittings on hot and cold water piping in lieu of threaded or flanged fittings is acceptable in sizes 2" to 8" inclusive. The mechanical couplings shall be self-centering and shall engage and lock the grooved pipe and/or fittings in a positive couple while allowing for some degree of angular pipe deflection, contraction and expansion. Entire coupling installation including pipe grooving shall be performed in accordance with the manufacturer's instructions. Mechanical Products couplings together with their respective grooved end pipe fittings are acceptable.
   1. The gasket style and elastomeric material (grade) shall be verified as suitable for the intended service as specified.
   2. Grooved end shall be clean and free from indentations, projections, and roll marks in the area from pipe end to groove for proper gasket sealing.
   3. A manufacturer factory-trained field representative shall provide on-site instruction for contractor's field personnel in the proper use of grooving tools and installation of grooved piping products. Factory-trained representative shall periodically review the product installation. Contractor shall remove and replace any improperly installed products.

O. Pressed Connect Fit (Pressure Seal - Press Fit) Fittings: All the connections shall be made in accordance with the manufacturer’s installation instructions. Copper tubing shall be cut at right angles using displacement type cutter or fine-toothed saw. Burrs shall be removed from inside and outside of tubing to prevent cutting sealing element. Mark insertion depth according to manufacturer’s insertion depth chart. Seals and grip ring shall be checked for correct fit. Only the manufacturer’s sealing elements shall be used. Press fitting shall be slid onto tubing while turning slightly to the marked depth. Oils or lubricants shall not be used. Fitting connections shall be made with the tool provided by manufacturer. Manufacturer’s assembly tool shall be used to perform the pressing process.

P. For locations where there is insufficient access to accommodate the pressing tool, this type of joint is not allowed. Sufficient clearance must be left around each joint to allow room for the pressing tool and jaw to be attached without interference when repairing the system in the future.

3.6 INSTALLATION OF FLEXIBLE CONNECTIONS

A. Install stainless steel type on the water line at the circulating pumps and on the chilled water lines; and bronze type on the refrigerant line. Pipe system must be properly supported so as not to impose weight on the connectors which would compress the hose and relax the braid tension. Avoid torque. Do not twist the hose assembly during installation when aligning bolt holes in a flange or in mating-up the pipe threads.

3.7 PIPING TESTS

A. Where piping installed under this project is connected to any existing system, such installed piping shall be isolated from the existing system during the performance of the required tests.

3.8 INSTALLATION OF PIPING SPECIALTIES

A. Pipe Escutcheons: Install pipe escutcheons on each pipe penetration through floors, walls, partitions, and ceilings where penetration is exposed to view; and on exterior of building. Secure escutcheon to pipe or insulation so escutcheon covers penetration hole, and is flush with adjoining surface.

B. Strainers
   1. Provide pipe nipple and shutoff valve in strainer blow down connection, full size of connection, except for strainers 2" and smaller installed ahead of control valves feeding individual terminals. Where indicated, provide drain line from shutoff valve to plumbing drain, full size of blow down connection.
   2. Provide strainers in supply line ahead of the following equipment and elsewhere as indicated:
      a. Pumps
      b. Steam traps serving steam main drips
      c. Temperature control valves
      d. Pressure reducing valves
      e. Temperature or pressure regulating valves

C. Dielectric Unions: Per Sections MC 1203.1.1 and 1303.1.1, joints between different ferrous and non-ferrous metallic piping materials shall be made with approved dielectric fittings or brass converter fittings.

D. Pipe Sleeves
   1. Install pipe sleeves where piping passes through walls, floors, ceilings, and roofs. Do not install sleeves through structural members of work, except as detailed on the Drawings or as reviewed by the Commissioner. Install sleeves accurately centered on pipe runs. Size sleeves so that piping and insulation (if any) will have free movement in sleeve, including allowance for thermal expansion; but not less than 2 pipe sizes larger than piping run. Where insulation includes vapor-barrier jacket, provide sleeve with sufficient clearance for installation. Install length of sleeve equal to thickness of construction penetrated, and finish flush to surface; except floor sleeves. Extend floor sleeves 1/4" above level floor finish, and 3/4" above floor finish sloped to drain.
   2. Install sheet-metal sleeves at interior partitions and ceilings other than suspended ceilings.
   3. Install iron-pipe sleeves at exterior penetrations, both above and below grade.
   4. Install steel-pipe or plastic-pipe sleeves where indicated on the Drawings.
   5. Sleeves for floors, walls and other masonry work shall be set in place before the slabs or walls are constructed. In buildings having floor slab of composite metal deck construction, Contractor shall be responsible for cutting holes in the steel deck. Where drilled openings are in terra cotta arch, exposed hollow core of the blocks shall be completely filled with non-shrink grout and prepacked to achieve firm bearing on the entire perimeter of the structural steel sleeve. Where corrugated sheet metal is encountered, it shall be cut by the rotary drill used to cut the arch. For location of sleeve, Contractor is to coordinate with new and existing Drawings (Structural steel beams are shown on original Drawings). Openings in arch must be located to miss existing structural steel. Openings in existing arch are to be made by rotary core drill only. Hammering of any type is not permitted. The size of the

opening in arch may not exceed the requirement shown on the Details Drawings. The mix for non-shrink grout shall be in accordance with the manufacturer's recommendations. The non-shrink grout shall be compacted to provide firm bearing between the structural steel sleeve or sleeves and the existing arch. Additionally, where there are two sleeves, provide compacted non-shrink grout between the sleeves.

E. Mechanical Sleeve Seals: Mechanical modular seals may be used in lieu of packing and sealant for sleeves and core drilled holes. Loosely assemble rubber links around pipe with bolts and pressure plates located under each bolt head and nut. Push into sleeve and center. Tighten bolts until links have expanded to form watertight seal. Use fire protective seals where required. Size annular space as required for seal installation.

3.9 INSTALLATION OF EXPANSION COMPENSATION

A. Expansion joints: Install expansion joint as determined for adequate expansion of installed piping system. Provide pipe anchors and pipe alignment guides in accordance with manufacturer's recommendations. Align units properly to avoid end loading and torsional stress.

B. Expansion loops: Fabricate expansion loops as determined for adequate expansion of installed piping system. Subject loop to cold spring that will absorb 50% of total expansion between hot and cold conditions. Provide pipe anchors and pipe alignment guides as determined to properly anchor piping in relationship to expansion loops.

C. Expansion compensation for risers and terminals: If not indicated on the Drawings, install connection between piping mains and risers with at least 5 pipe fittings including tee in main, install connections between piping risers and terminal units with at least 4 pipe fittings including tee in riser.

3.10 MISCELLANEOUS CONNECTIONS

A. For steel piping runouts not detailed on the Drawings, use three elbow connections between runouts and mains.

B. Connections to Equipment: provide three elbow runouts to all rotating equipment such as pumps and chillers. Provide swing connections for boilers. Provide two elbow connections to fuel oil tanks.

C. Connections to Building Structure: connect to trusses and joints at panel points. Provide supplementary steel framing at panel points to transfer loads to framing.

D. Connection to domestic water system shall be protected by reduced pressure principal backflow preventer.

3.11 INSTALLATION OF SUPPORTS AND ANCHORS

A. Provide all necessary pipe hanger material needed to safely and securely support or hang all piping. Pipe hanger loads shall be determined by accurate weight balance calculations to prevent transferring loads and forces to any equipment and terminal connections. Per Section MC 305.4, piping shall be supported at distances not exceeding the spacing specified in MC Table 305.4 or in accordance with MSS SP-69.

B. Install building attachments at required locations within concrete or on structural steel for proper piping support. Hangers and anchors shall be attached to building structure per Section MC 305.3. Space attachments within maximum piping span length indicated in MSS SP-69 and MSS SP-89 and MC Table 305.4. Install additional concentrated loads at valves, flanges, guides, strainers, expansion joints, and changes in direction of piping. Install concrete inserts before concrete is poured; fasten insert securely to forms. Where concrete with compressive strength less than 2500 psi is indicated, install reinforcing bars through openings at top of inserts. For composite metal decks, inserts shall be of the type that is supported entirely by the concrete slab, not by the metal deck. Install expansion bolts after erection of the metal deck, after concrete is placed and completely cured in accordance with the bolts manufacturer's written installation instructions. Expansion bolts shall be installed so that the load acts on the bolts in shear and withdrawal. Expansion bolts shall be carefully located in order to eliminate the risk of damage to concrete, steel reinforcement, electrical conduits and any other embedded items.

C. Install hangers, supports, clamps and attachments to support piping properly from building structure per Section MC 305.3. Arrange for grouping of parallel runs of horizontal piping to be supported together on trapeze type hangers where possible. Install supports with maximum spacings complying with MSS SP-69 and MSS SP-89 and MC Table 305.4. Where piping of various sizes is to be supported together by trapeze hangers, space hangers for smallest pipe size or install intermediate supports for smaller diameter pipe. Do not use wire or perforated metal to support piping, and do not support piping from other piping.

D. Install hangers and supports complete with necessary inserts, bolts, rods, nuts, washers and all other items and accessories. Except as otherwise indicated for exposed continuous pipe runs, install hangers and supports of same type and style as installed for adjacent similar piping.

E. Prevent electrolysis in support of copper tubing by use of hangers and supports which are copper plated or by other recognized industry methods.

F. Provisions for Movement
   1. Install hangers and supports to allow controlled movement of piping systems, to permit freedom of movement between pipe anchors and to facilitate action of expansion joints, expansion loops, expansion bends and similar units.
   2. Load Distribution: Install hangers and supports so that piping live and dead loading and stresses from movement will not be transmitted to connected equipment.
   3. Pipe Slopes: Install hangers and supports to provide indicated pipe slopes and so that maximum pipe deflections allowed by ANSI B31 Pressure Piping Codes are not exceeded.

G. Pipe Supports
   1. Mains located near floors shall be supported on roller type pipe stands bedded in cement base. When mains are installed before concrete floor is laid, the mains shall be supported from overhead construction until the pipe stands can be put in place.
   2. Horizontal piping connections (near floor) to convectors and all other items and accessories located more than 4' from risers shall be supported on adjustable iron pipe stands. Pipe stand shall consist of a split ring extension hanger mounted on a hanger flange, which shall be secured to the floor.

H. Insulated Piping: Comply with the following installation requirements.
   1. Clamps: Attach clamps, including spacers (if any), to piping with clamps projecting through insulation; do not exceed pipe stresses allowed by ANSI B31.

2. Shields: Where low-compressive-strength insulation or vapor barriers are indicated on chilled water piping, install coated protective shields. For pipe 8" and over, install wood insulation saddles.
3. Saddles: Where insulation without vapor barrier is indicated, install protection saddles.
4. Insulation Saddle System, the equal of Anvil Fig 260 ISS can be used instead of shields and/or saddles when proper insulating techniques are employed including the use of mastic and caulk on all insulation edges and final taping. Position the pipe on the saddle, notch section of the insulation to fit around the saddle, square cut the adjoining insulation section and butt the mating end to the notched section, finish taping according to standard methods, no metal shield is required between the hanger and pipe insulation.

I. Install anchors at proper locations to prevent stresses from exceeding those permitted by ANSI B31 and to prevent transfer of loading and stresses to connected equipment.

J. Fabricate and install anchor by welding steel shapes plates and bars to piping and to structure. Comply with AWS standards.

K. Where expansion compensators are indicated, install anchors in accordance with expansion unit manufacturer's written instructions and to limit movement of piping and forces to maximum recommended by manufacturer for each unit.

L. Anchor Spacings: where not otherwise indicated, install anchors at ends of principal pipe-runs, at intermediate points in pipe-runs between expansion loops and bends. Make provisions for preset of anchors as required to accommodate both expansion and contraction of piping.

M. Piping passing under concrete areas shall be supported by hangers secured by means of beam clamps fastened to the beams. Where pipe support spacing is excessive between steel, beam clamps shall be fastened to structural members that are approved by the Commissioner. Removed fireproofing around beams shall be replaced to original condition. No hangers or supports shall be attached to hung ceilings, concrete, ductwork or work of other trades.

3.12 CLEANING, FLUSHING, INSPECTING

A. Clean exterior surfaces of superfluous materials, and prepare for application of specified coatings (if any). Flush out piping systems with clean water before proceeding with required tests. Inspect each run of each system for completion of joints, supports and accessory items. Inspect pressure piping in accordance with procedures of ASME B31.

B. Hanger Adjustments: adjust hangers so as to distribute loads equally on attachments.

C. Support Adjustment: provide grout under supports so as to bring piping and equipment to proper level and elevations.

3.13 PAINTING

A. Upon completion of the installation, remove all protecting materials, all scale and grease and leave in a clean condition for painting.

3.14 PIPE APPLICATION

A. Mains
1. Return Mains: Return mains shall be run in the locations shown on the Drawings. Return mains on floors or in trenches shall not be installed until floors have been laid, unless otherwise directed. Such return piping shall be painted immediately after erection. Outlets of return piping in trenches, and at or near floor shall be plugged or capped until connecting piping has been installed.
2. Low Points: Low points of each seal or pocket in piping shall be provided with a 1/2" (minimum size) gate valve arranged to empty the line.
3. Water Piping: Piping shall be installed at the elevations and locations indicated on the Drawings. It shall be so supported as to avoid the trapping of air. However, where trapping of air cannot be avoided, provision shall be made for manual venting of piping in such locations. Each low point in a main shall be provided with a 1" bronze hose gate valve, having a bronze cap and chain on the outlet.
4. Condensate Drain Piping: Condensate drain piping from equipment drain shall be pitched at not less than one-eighth unit vertical in 12 units horizontal (1-percent slope) in the direction of discharge per Section MC 307.2.1.

B. Runouts
1. Runouts from return mains for risers, convectors, and all other items and accessories shall be taken from the side of horizontal return main and shall be pitched toward the main, unless otherwise shown on the Drawings.

C. Risers: Steam and return risers shall be installed in the locations indicated on the Drawings. They shall be of the sizes marked on the Riser Schedule or Sheet. Where the distance between fittings is less than 18', no couplings shall be used in the riser. Risers shall be supported and anchored at the first floor of a 3-story building, and at the second floor of a 4-story building. Risers, connections to convectors, traps, and all other items and accessories shall be neatly arranged and shall allow for expansion.

D. Drips, Test Connections
1. Drips shall be provided to keep horizontal steam piping free of condensation. They shall be connected from steam mains, branches at locations indicated on the Drawings, through traps to return mains as per Drawings Details. Each trap in a steam main drip shall have a strainer and a full size valved by-pass. Drips not shown on the Drawings, but made necessary by job conditions, shall be provided as directed, as part of the Contract.
2. Provide plugged tees for steam pressure and vacuum test connections in the locations indicated on the Drawings. Test connections shall be as shown in the Drawings Details.

E. Vacuum Heating Pump Connections
1. Condensate return piping from direct radiation, heating coils, drips, and all other items and accessories shall be connected into a vacuum heating pump suction header, unless otherwise shown on the Drawings. Suction header shall be constructed of pipe, flanges, welding fittings in accordance with the Drawings Details.
2. Vacuum pump installation shall be complete in all respects. Piping, valves, connections shall be arranged so that the pumping units will perform the duties when operating simultaneously or separately.

F. Steam Convector Connections: Provide schedule 40 black steel pipe connection to steam convectors. Supply shall be provided with a gate valve, and a pneumatic steam control valve and return with a thermostatic trap, three elbow swing joint, and gate valve. Refer to the Standard Details.

G. Fill and Make-Up Water System to match connecting Plumbing Work.

H. Dissimilar Pipe Joints
1. Between Black Steel Pipe and copper pipe or tubing: Use a dielectric connector or brass converter fittings per Sections MC 1203.1 and MC 1303.1.1.
2. Between galvanized steel pipe and copper pipe or tubing: Use a dielectric connector or brass converter fittings per Sections MC 1203.1 and MC 1303.1.1.
3. Between Threaded Brass and Threadless Copper Pipe: Use a suitable brazing adapter.
4. Between Threaded Pipe and Types L Copper Tubing or Welded Brass: Water Tube: Use suitable cast bronze soldering adapter.
5. Between Type DWV Copper Tubing or Welded Brass Drainage Tube and Threaded Outlets at Drains or Fixtures: Use a suitable cast bronze adapter.

I. Piping for Water Heaters: Where Plumbing and Drainage furnishes a steam tube type water heater, provide steam and return piping, temperature regulating valve, hand valves, traps, and all other items and accessories as shown on the Drawings.

J. Schedule 80 Black Steel Pipe: Use for steam heating return mains, return riser runouts, steam heating coil returns, drips, blow-offs, boiler feed pump discharge, boiler equalizer, steam vent lines, and for all fill and vent piping buried in the ground. Pipe buried in the ground shall be protected with heavy coat of black asphaltum paint.

3.15 PIPE AND FITTING SCHEDULE

A. Cold Water Above Ground (CW) 125 psig and Less:
1. 4" and Less: Type "L" Copper tubing with soldered fittings.

B. Steam Condensate Returns, Risers Runouts, Drips:
1. 21/2" and Less: Schedule 80 Black Steel pipe, with Screwed End Schedule 80 Weight Cast-Iron fittings, or Weld End Schedule 80 Weight Steel fittings.
2. 3" and Up: Black Steel pipe (Schedule 80) with Weld End Schedule 80 Steel fittings.

C. Hot Water Supply and Return (HWS and HWR) 125 psig and less:
1. 3” and Less: Standard weight black steel pipe with screwed ends standard weight cast-iron fittings; or grooved end pipe with grooved end fittings; or Type L hard drawn copper tubing with wrought copper or cast copper alloy solder fittings and Type 3 solder (ASTM B32 Alloy Grade E, AC or HB) or mechanically extracted joints made up with brazing alloy or press fit.
2. 4” size: Standard weight black steel pipe with screwed ends standard weight cast iron fittings or weld end standard weight steel fittings or grooved end fittings; or (press fit Type L hard drawn copper tubing)
3. Acceptable option is to provide brass pipe, brass tubing, copper or copper-alloy pipe per MC Table 1202.4. Joints between brass pipe or fittings shall be brazed, mechanical, threaded or welded joints conforming to Sections MC 1203.3 and MC 1203.5. Joints between brass tubing or fittings shall be

brazed, mechanical, or soldered joints conforming to Sections MC 1203.3 and MC 1203.6. Joints between copper or copper alloy pipe or fittings shall be brazed, mechanical, soldered, threaded or welded joints conforming to Sections MC 1203.3 and MC 1203.7.

D. Condensate Drain Piping: Connected to drip-lip pump bases; all drip piping from air handling units; all drains and overflow lines from heating and air conditioning systems, and all condensate piping systems connected to drain pans - All Sizes: Standard weight (Schedule 40) galvanized steel pipe; or Type L hard temper copper tubing and fittings. Minimum condensate drain line diameter shall be in accordance with MC Table 307.2.2.

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SECTION 23 22 16 - STEAM AND CONDENSATE PIPING SPECIALTIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum and (5) the Contract [City of New York Standard Construction Contract].

1.2 SUMMARY

A. Provide steam and condensate specialties specified herein, as shown on the Drawings, and as needed for a complete and proper installation. The types of steam and condensate specialties specified in this section include: thermostatic trap, float and thermostatic traps, steam terminal inlet valve, steam vent, temperature regulators, self-contained thermostatic steam valves and steam vacuum breaker.

B. Section includes:

1. Thermostatic Traps
2. Float and Thermostatic Traps

1.3 RELATED SECTIONS

A. Section 23 05 00 - COMMON WORK RESULTS FOR HVAC

B. Section 23 05 53 - IDENTIFICATION FOR HVAC PIPING AND EQUIPMENT

C. Section 23 07 19 - HVAC PIPING INSULATION

1.4 SUBMITTAL PROCEDURES

A. Refer to DDC General Conditions Section 01 33 00 “Submittal Procedures” for all submittals.

B. Submit schedules indicating manufacturers’ figure number, size, location, capacities, required clearances, method of field assembly, field connection details, and features for each required steam and condensate specialty.

C. Maintenance Data

D. Maintenance Manual

E. Provide a set of Manufacturer’s guarantees for all equipment supplied.

1.5 QUALITY ASSURANCE

A. Refer to DDC General Conditions.

B. Provide steam and condensate specialties of same type by the same manufacturer.

C. Codes and Standards: ASME Compliance: Manufacture and install steam and condensate specialties in accordance with ASME B31.9: Building Services Piping; for pressure over 125 psi, use ASME B31.1: Power Piping.

PART 2 - PRODUCTS

2.1 MATERIALS AND MANUFACTURERS

A. Provide factory-fabricated steam and condensate specialties recommended by manufacturer for use in service indicated. Provide steam and condensate specialties of types, capacities, and pressure ratings indicated for each service, or if not indicated, provide proper selection as determined by the Commissioner to comply with field requirements. Provide sizes and connections which properly mate with pipe, tube, and equipment connections.

B. Thermostatic Traps

1. Provide thermostatic traps where indicated on the Drawings. Traps shall be designed to permit removal and replacement of all operating and wearing parts without disturbing piping connections.
    a. Low Pressure Traps: -25" Hg to 15 psi.
    b. Body: cast brass with integral union tailpiece and screw-in cap.
    c. Thermostatic element: Diaphragm or Bellows: Stainless steel.
    d. Head and Seat: Replaceable, hardened stainless steel.
2. Manufacturers:
    a. ITT Hoffman Specialty.
    b. MEPCO Marshall Engineered Products Co. (Dunham-Bush, Inc.).
    c. Spirax Sarco.
    d. Nicholson.
    e. Tunstall Steam Products/Tunstall Corporation.
    f. Watson McDaniel
    g. Barnes and Jones.
    h. Or approved equal.

C. Float and Thermostatic Traps:

1. Provide float and thermostatic traps with body and cover constructed of cast iron or semi-steel, designed so all internal parts are accessible without disturbing piping. Provide thermostatic element of diaphragm or bellows type with stainless steel valve cone and valve seat. Provide stainless steel or seamless copper float, with positive valve mechanism, stainless steel valve and renewable seat.
    a. Low Pressure Traps: -25" Hg to 15 psi.
2. Manufacturers:
    a. ITT Hoffman Specialty.
    b. Armstrong Machine Works.
    c. MEPCO Marshall Engineered Products Co. (Dunham-Bush, Inc.)

d. Spirax Sarco.

e. Nicholson.

f. Tunstall Steam Products/Tunstall Corporation.

g. Watson McDaniel.

h. Barnes and Jones.

i. Or approved equal.

PART 3 - EXECUTION

3.1 EXECUTION REQUIREMENTS

A. Refer to DDC General Conditions for the requirements governing execution.

B. Install steam and condensate specialties in accessible locations to permit service. When located behind heating enclosures, center steam and condensate specialties on access door. Install in neat and workmanlike manner. Use only wrenches having square flat jaws, or non-metallic strap wrenches on brass specialties; wrench marks will not be permitted. Provide strainer if not integral with equipment. If replacing an existing trap, remove the old spud and nut and replace with new. For threaded connections, the pipe union shall not be a substitute for the trap's spud and nut.

C. Thermostatic Traps: Install on outlet of each steam heating terminal unit, on the condensate return connection from each convector, on the steam coil unit ventilator, on the cabinet heater or other heat source. Reduction in sizes from connecting pipes to traps shall be made with reducing elbows or couplings. No pockets or seals shall be formed in connections to traps. Each thermostatic trap shall be equipped with ground joint type union inlet.

D. Float and Thermostatic Traps: Install on outlet of each steam drip, on unit heater return connection, on the return connection from the heating element of each water storage heater and on hot water converter. Install strainer ahead of trap if not integral with trap, union and gate valve on inlet and outlet. Install where the maximum condensate load to be handled exceeds 50 lb per hour.

3.2 FIELD QUALITY CONTROL

A. Instruct maintenance personnel in the operation of steam valves and traps installed. Secure written confirmation that instruction has been provided and approved maintenance manuals received.

END OF SECTION 23 22 16

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SECTION 23 22 23 STEAM CONDENSATE PUMPS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum and (5) the Contract [City of New York Standard Construction Contract].

1.2 SUMMARY

A. Section includes: Vacuum pumps

1.3 RELATED SECTIONS

A. Section 23 05 00 - COMMON WORK RESULTS FOR HVAC

B. Section 23 05 53 - IDENTIFICATION FOR HVAC PIPING AND EQUIPMENT

1.4 SUBMITTAL PROCEDURES

A. Refer to DDC General Conditions Section 01 33 00 “Submittal Procedures” for all submittals.

1.5 SUBMITTALS

A. Product Data: Submit manufacturer's pump characteristic performance curves with selection points clearly labeled, net-positive suction head characteristics, and rated capacity of selected model.

B. Wiring Diagrams: Power, signal, and control wiring. Differentiate between manufacturer-installed and field-installed wiring.

C. Maintenance data

1. Maintenance manual

1.6 QUALITY ASSURANCE

A. Refer to DDC General Conditions Section 01 40 00 “Quality Requirements”.

B. UL and NEMA Compliance: Provide premium efficiency electric motors and ancillary electrical components which are UL-listed and labeled, and which comply with NEMA standards and NYC EPP, Minimum Standards for Construction Products.

PART 2 - PRODUCTS

2.1 MATERIALS AND MANUFACTURERS

A. Vacuum Units

1. Provide duplex vacuum units consisting of cast-iron receiver, 2 water pumps, inlet strainer, separation chamber with 2 air pumps, float and vacuum controls, NEMA Type 2 as required by Code control panel enclosure and all accessories. Each pump shall be driven by a separate motor.

a. Receiver: Construct of cast iron. Equip with vacuum switches, water level gauge with guard and brass try-cock, dial thermometer, vacuum gauge, air suction check valve, lifting eyes, companion flanges, low water cutoff switch, relief valve and reverse acting temperature limit switch to prevent operation of vacuum pump if the condensate temperature exceeds 1800F.

b. Receiver Inlet Strainer: Construct of cast iron, with removable screen and dirt pocket.

c. Vacuum Unit: Mount on receiver, factory-wired and piped. Provide unit consisting of multi-jet vacuum producers, centrifugal pump and motor assembly mounted on separation chamber, water level gauge, thermometer, suction swing check valve, air vent, overflow connection, and automatic hurling water level controls complete with air gap. Provide mechanical shaft seals.

d. Water Pumps: Provide flange mounted centrifugal type feed pumps designed for vertical operation. Construct bronze fitted and equip with bronze impeller, renewable bronze case ring, stainless steel shaft, and mechanical shaft seal.

e. Provide a combination across-the-line type motor starter for each motor consisting of a three-pole main contactor, equipped with thermal over-load relays in each phase leg and a three-pole fused motor circuit switch mounted within the control cabinet and having an externally operable handle. (The switch handles shall be mechanically interlocked with the door, so that the door cannot be opened unless the switch is in the "OFF" position). Also provide seamless reinforced copper float operated switches for the water pumps, and two (2) vacuum regulators. Each duplex unit shall be equipped with two (2) three-position selector switches. Positions shall be designated with suitable nameplates as follows:
   1) Position No. 1: Float & Vac. On
   2) Position No. 2: Float On - Vac. Off
   3) Position No. 3: Continuous

f. Provide manual sequence control (lead-lag) for each duplex unit. A selector switch (in addition to the two selector switches specified) shall be provided and shall have a nameplate reading: "VACUUM PUMP NO. 1 LEAD - VACUUM PUMP NO.2 LEAD". This control shall provide for (1) manual selection of the active pump, (2) automatic simultaneous operation of both pumps under abnormal load conditions and (3) automatic operation of the inactive pump or lag pump if the lead pump or its control fails.

g. Starters for motors up to and including 3 horsepower shall be Size 1, Type 1, and for motors above 3 HP shall be Size 2, Type 1. Manufacturers shall be
   1) Allen-Bradley,
   2) Cutler-Hammer,
   3) General Electric Co. CR,
   4) Square D,
   5) Or approved equal.

h. Float switches shall be General Electric Co., Allen-Bradle, Square D or approved equal.

i. Vacuum regulators shall be set for 2" minimum and 7" maximum vacuum. They shall be Cutler-Hammer, General Electric Co., Mercoid Corporation, or approved equal.

j. The combination starters shall be mounted within the control cabinet, with the selector switches mounted on the cover of the cabinet. The control cabinet shall be mounted on the pump set and completely wired at the factory, including wiring between controls and motors, complete and in accordance with NY City Electrical Code requirements. All leads shall be

brought to numbered terminal strips to which all external connections shall be made. A complete wiring diagram shall be mounted inside the cabinet door.

k. Vacuum Unit Control Sequence: Provide for manual selection of active or lead pump through lead-lag control on duplex air pumps. Provide simultaneous operation of both pumps under abnormal load conditions and operate inactive pump should active pump fail. Provide float switch in boiler feed receiver for automatic overflow control, actuating air pumps pulling excess condensate into vacuum unit separation chamber, where it may flow by gravity to drain.

l. Capacity: Each pump shall have not less than the capacity of equivalent direct radiation indicated on the Drawings. With all pumps operating, indicated air and water quantities shall be doubled. Quantities of water and air specified are at a temperature of 160oF from 5½" vacuum and water quantity given is against discharge pressure indicated.

B. Manufacturers:

1. Domestic Pump; ITT Fluid Handling Div.
2. Skidmore Pumps.
3. SHIPCO Pumps Co.
4. MEPCO Marshall Engineered Products Co.(Dunham-Bush, Inc.)
5. Federal Pump Corporation.
6. Spirax Sarco.
7. Or approved equal.

2.2 SUPPLEMENTAL PROTECTION

A. Pumps shall be given one coat of rust inhibitive paint at the factory and shall be finish painted.

B. Paint the steel door of the control panel with one coat of heat resistant primer and one finish coat.

PART 3 - EXECUTION

3.1 EXECUTION REQUIREMENTS

A. Refer to DDC General Conditions for the requirements governing execution.

3.2 SUPPLEMENTAL INSTALLATION

A. Support: Install feedwater equipment on 4" high concrete pad, and with vibration isolator as required.

B. Connections: Connect vacuum units piping, valves, drains and all other items and accessories.

C. Electrical Wiring: Install electrical devices furnished by manufacturer but not specified to be factory-mounted. Furnish copy of manufacturer's wiring diagram submittal to Electrical.

1. Vacuum Units - Provide power supply connections to the control panel terminal strip.

2. Verify that electrical wiring installation is in accordance with manufacturer's submittal and installation requirements of Division-26 Sections. Do not proceed with equipment start-up unless all connections are completed.

D. Per MC 1004.3, clearances shall be maintained around heaters and tanks and related equipment and appliances so as to permit inspection, servicing, repair, replacement and visibility of all gauges. When equipment is installed or replaced, clearance shall be provided to allow access for inspection, maintenance and repair. Passageways around all sides of equipment shall have an unobstructed width as required by the manufacturer and in no case less than 18 inches, unless otherwise approved by the Commissioner.

3.3 FIELD QUALITY CONTROL/INTERDISCIPLINARY AND FUNCTIONAL PERFORMANCE TESTS

A. Vacuum Units

B. Perform a "closed valve test" to confirm pumps generate and maintain vacuum.

C. Demonstrate operability of float and vacuum switches to alternate pumps in sequence.

D. Interdisciplinary Pre-Start-Up and Start-Up Tests

1. The Contractor shall conduct interdisciplinary pre-start up and start up tests as per the manufacturer’s start up procedures. Contractor shall submit signed start up affidavit signed by the factory authorized service representative indicating that all of the manufacturer’s pre-start up and start up procedures have been successfully completed.

E. Functional Performance Tests

1. Contractor shall also submit signed functional performance testing affidavit signed by the factory `authorized service representative indicating that all of the manufacturer’s functional performance tests have been successfully completed.

3.4 CLOSEOUT PROCEDURES

A. Instruction: Instruction of building personnel shall be for a minimum of 4 hours.

END OF SECTION 23 22 23

SECTION 23 31 13 - METAL DUCTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum and (5) the Contract (City of New York Standard Construction Contract).

1.2 SUBMITTAL PROCEDURES

A. Refer to DDC General Conditions Section 01 33 00 “Submittal Procedures”.

B. Product Data
   1. Submit Shop Standards for metal ductwork including gages, materials, type of joints, sealing requirements, method of fabrication and reinforcing. Shop standards shall be in accordance with the SMACNA HVAC Duct Construction Standards, 2005 Edition.
   2. Submit manufacturer’s product data for factory-fabricated single wall round ductwork, duct sealant and cement, gasket materials, duct liner and sound traps; and installation instructions.

C. Shop Drawings: layout drawings of metal ductwork and fittings including but not limited to duct sizes, locations, elevations, slopes of horizontal runs, wall and floor penetrations, and connections, including location of 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.

1.3 QUALITY ASSURANCE

A. Refer to DDC General Conditions Section 01 40 00 “Quality Requirements.”

PART 2 - PRODUCTS

2.1 MATERIALS

A. Sheet Metal:
   1. Aluminum: ASTM B209, Alloy 3003, Temper H-14 sheet form with standard, one-side bright finish for ducts exposed to view and with mill finish for concealed ducts.
   2. Galvanized Steel: Lock-forming quality; ASTM A653 G60 coating designation; mill-phosphatized finish for surfaces of ducts exposed to view.
   3. Stainless Steel: ASTM A480, Type 316, sheet form with No. 4 finish for surfaces of ducts exposed to view; and Type 304, sheet form with No.1 finish for concealed ducts.
   4. Reinforcement Shapes and Plates: Galvanized steel reinforcement where installed on galvanized, sheet metal ducts; compatible materials for aluminum and stainless-steel ducts.

5. Tie Rods: Galvanized steel, 1/4" minimum diameter for 36" length or less; 3/8" minimum diameter for lengths longer than 36".

B. Gages of Metal for galvanized rectangular duct: Gages of metal shall be in accordance with Tables 2.1 through 2.28 of SMACNA HVAC Duct Construction Standards Third Edition - 2005. Duct shall be constructed to the pressure shown on the on the Drawings. The duct pressure classification shall default to the equipment external static pressure if the pressure levels are not shown on the Drawings.

C. Hangers and Supports
1. Rod Type Hangers and Angles: Hot dip galvanized steel with 2 locking nuts in place.
2. Strap Hangers: Same material as ducts except that galvanized-steel straps attached to aluminum ducts shall have contact surfaces painted with zinc-chromate primer.
3. Trapeze and Riser Supports: Steel shapes complying with ASTM A36. Same material as ducts.
4. Strap and Rod Sizes: Comply with SMACNA for sheet width and thickness and for rod diameters.
5. For ducts with a cross sectional area of 2 square feet or less, hangers shall be constructed of at least 1 inch by 1/16 inch steel strap. For ducts with a cross sectional area of over 2 square feet, hangers shall be constructed of at least 1 inch by 1/8 inch steel strap.
6. Expansion bolts for use in existing and new reinforced stone concrete slabs and concrete deck shall be as follows: Fully threaded, torque-controlled, wedge-type expansion anchor consisting of a high-strength threaded stud body, stainless steel expansion elements (clip, wedge), nut and washer. Expansion Bolts installed in concrete shall have current ICC-ES listing for performance in cracked concrete as per Section BC 1913 of the 2008 NYC Building Code.
7. Manufacturers:
   a. “Trubolt+” as manufactured by ITW Ramset/Red Head
   b. "Kwik Bolt 3” as manufactured by Hilti, Inc.
   c. “Power Stud+ SD2” as manufactured by Powers Fasteners, Inc.
   d. Or approved equal.
8. Cable Hanging Systems (Gripple): Cable Hanging Systems with adjustable mechanical devices compliant with SMACNA HVAC Duct Construction Standards shall consist of ready-to-use factory tested kit comprising of cable and cable end options. Crimps shall be Factory installed. All cable hanger products shall be certified as SMACNA and UL listed. All cable hangers shall have a minimum of 4:1 safety margin over the listed Safe Working Load (SWL).

D. Miscellaneous Ductwork Materials:
1. Sheet Metal Screws, Machine Bolts, Rivets and Nuts: Tinned, cadmium plated or rust resistant materials. Bolts shall be button-head stove bolts, 1/4" x 3/4" unless otherwise specified.
2. Concrete Inserts: Steel or malleable iron, galvanized; continuously slotted or individual inserts conforming with MSS SP-58, Types 18 and 19, Class A-B.
3. Beam Clamps: For ducts with a cross sectional area of 2 square feet or less, clamp shall be Caddy Catalog Number 4H-Series Fig 2. For ducts with a cross sectional area of over 2 square feet, clamp shall be Fee & Mason 255L with locking nut and 255S retaining strap.
4. Welding Studs: Erico Fastening Systems, capacitor discharge, low carbon steel, copper flashed.
5. Structural (carbon) Steel Shapes and Steel Plates: ASTM A36, shop primed.
6. Stainless Steel Shapes and Plates: ASTM A276 and ASTM A666.
7. Duct Sealant: Non-hardening, non-migrating mastic or liquid elastic sealant, type applicable for fabrication/installation detail, as compounded and recommended by manufacturer specifically for sealing joints and seams in ductwork.

a. All adhesives and sealants used on the construction of ductwork shall comply with the South Coast Air Quality Management District (SCAQMD) Rule #1168; VOC limits shall comply with the limits indicated in SCAQMD Rule #1168 of July 1, 2005, and Rule Amendment date of September 20, 2011.

8. Duct Cement: Non-hardening migrating mastic or liquid neoprene based cement, type applicable for fabrication/installation detail as compounded and recommended by manufacturer specifically for cementing fitting components, or longitudinal seams in ductwork.
   a. All adhesives and sealants used on the construction of ductwork shall comply with the South Coast Air Quality Management District (SCAQMD) Rule #1168; VOC limits shall comply with the limits indicated in SCAQMD Rule #1168 of July 1, 2005, and Rule Amendment date of September 20, 2011.
9. Welds: Weld material shall match ductwork material. Galvanized ductwork welds to be cleaned and painted with galvanizing repair paint conforming to ASTM A780.
10. Fiberglass duct lining shall be covered with a matte-faced neoprene covering and sealed with an acrylic polymer. Surface burning characteristics shall have a flame spread index less than 25 and smoke developed index less than 50 per ASTM E84 or UL 723, using the specimen preparation and mounting procedures of ASTM E2231 per Section MC 604.3. Lining shall be secured with pins or mechanical fasteners. Lining that is secured with adhesive only is not acceptable. The fiberglass lining shall not support fungi or bacterial growth as per ASTM C1338, ASTM G21 and ASTM G22. Fiberglass lining shall conform to the erosion test method described in UL Publication No. 181. Fiberglass lining density shall be $1^1/_2$ lbs. per cubic foot, minimum of 1", unless otherwise indicated on the Drawings.
11. The duct lining shall have the following minimum R values:

Thickness (in)	R Value ($ft^2 \cdot °F \cdot h/BTU$)
1	4.3
1.5	6.3
2	8.7

12. The minimum duct lining sound absorption coefficients shall be as follows:

Thickness (in.)	NRC
1	.75
1.5	.90
2	1.00

13. Manufacturers:
    a. Owens Corning Aeroflex.
    b. Johns Manville Permacote Linacoustic.
    c. Certainteed Ultralite.
    d. Or approved equal.
14. Duct liner may also be a non-erosive, open cell, fiber-free, polyimide foam material. Foam maximum thermal conductivity shall be .35 $BTU \cdot in/h \cdot °F \cdot ft^2$. Foam surface burning characteristics shall have a flame spread index less than 25 and smoke developed index less than 50 per ASTM E84 or UL 723,

using the specimen preparation and mounting procedures of ASTM E2231 per Section MC 604.3. The foam lining shall conform to the erosion test method described in UL Publication No. 181. The foam lining shall not support fungi or bacterial growth as per ASTM C1338, ASTM G21 and ASTM G22. Foam lining shall be coated with an acrylic polymer. Foam sound absorption coefficient shall be a minimum of .65 NRC for 1" lining and .80 NRC for $1^1/_2$" lining. The foam lining for use as a thermal/acoustical liner for metal duct systems shall be one of the following manufacturers:

a. Owens Corning .
b. Johns Manville.
c. Certainteed.
d. Or approved equal.

15. Adhesives and sealants used on the fabrication/installation of internal acoustical lining shall comply with the South Coast Air Quality Management District (SCAQMD) Rule #1168; VOC limits shall comply with the limits indicated in New York City Environmentally Preferable Purchasing (EPP) Minimum Standards for Goods. Those limits correspond to an effective date of the SCAQMD Rule #1168 of July 1, 2005, and Rule Amendment date of September 20, 2011.
16. Welds: Weld material shall match ductwork material. Galvanized ductwork welds to be cleaned and painted with galvanizing repair paint conforming to ASTM A780.

E. DUCT ACCESSORIES

F. Turning Vanes

1. Fabricated Turning Vanes: Provide fabricated turning vanes and vane runners, constructed in accordance with SMACNA: HVAC Duct Construction Standards, latest edition.
2. Acoustic Turning Vanes: Provide acoustic turning vanes constructed of airfoil shaped aluminum extrusions with perforated faces and fiberglass fill.
3. Manufacturers:
   a. Anemostat Products Div.
   b. Dynamics Corp. of America
   c. Duro Dyne Corp.
   d. Tuttle & Bailey, Hart & Cooley Mfg. Co.
   e. Titus Product, Div. of Philips Inds.
   f. Or approved equal.

G. Duct Hardware

1. Provide test hole fittings for making air readings for the proper adjusting and testing of the ventilating systems. Material and gauge of the fittings shall be compatible with the duct material. Include screw cap and gasket. Size of fitting shall allow insertion of testing instruments and of length of fitting shall allow for the duct insulation thickness. If required, provide test hole fitting for microprocessor type of instrument reading either local or remote.
2. Manufacturers:
   a. Duro Dyne Corp. Ventlock 699.
   b. Young Regulator Co.
   c. Titus Products.
   d. Or approved equal.

H. Duct Access Doors

1. Provide where indicated, duct access doors of size indicated and at location shown on the Drawings to permit inspections, operation and maintenance of all valves, coils including reheat coils, controls,

fire dampers, fire/smoke dampers, air monitors where applicable, automatic or motorized dampers, filters, bearings, traps, or other apparatus concealed behind the sheet metal work.

2. Construction: Construct of same or greater gage as ductwork served, provide insulated doors for insulated ductwork. Provide flush frames for uninsulated ductwork, extended frames for externally insulated duct. Provide 2 handle latch type access doors.
3. General Contractor shall provide access doors for access to valves, dampers and all the aforementioned equipment concealed in walls, furring and hung ceilings. The size of the access doors shall be at least 24" x 24".
4. Manufacturers:
   a. Air Balance Inc.
   b. Arlan Damper Corporation
   c. Duro Dyne Corp.
   d. Air Louver & Damper Inc.
   e. Ruskin Mfg.
   f. Or approved equal.

I. Fan Connections (Flexible Connections): (Ref. SMACNA HVAC Duct Construction Standards - 2005 Edition)
1. Provide an airtight fabric neck at the inlet and at the outlet connections of all air handling units, supply fans and exhaust fans and where ductwork connects to vibration isolation equipment in accordance with MC.603.18.
2. Necks shall be not less than 3" nor more than 10" in width and both sides shall be secured with crimped lock seam the entire perimeter with galvanized sheet steel bands 3" wide. This assembly shall be securely fastened to ducts and fans, and the joints shall be made air tight. Necks shall not be oiled or painted. Neck fabric shall be one of the following materials:
   a. Cotton duck, 10-ounces per square yard minimum weight,
   b. Flameproof elastomeric coated glass fabric, weighing not less than 14-ounces per square yard, having a tensile strength of 200 psi (minimum) and having a heat resistance of up to 500o F.
   c. Close woven glass cloth, double neoprene coated, 28-ounces per square yard minimum weight.
3. Where ambient air temperature exceeds 100oF, use material from Article 2.02.D.2b or 2.02.D.2c. Where materials are exposed to weather or corrosive fumes , use material Article 2.02.D.2c.
4. Manufacturers:
   a. Duro Dyne Corp.
   b. Flexaust (The) Co.
   c. Ruskin Mfg.
   d. Or approved equal.

2.2 FABRICATION – GENERAL

A. Fabricate ductwork from galvanized sheet metal of the gages specified.

B. Dissimilar Metals: Separate dissimilar metals used for ductwork with vinyl, neoprene or silicon rubber coated woven fiberglass or woven nylon/polyester blend duct connector fabric. No separation is required between screws or rivets and the materials they are inserted in.

C. Fabricate duct fittings to match adjoining ducts, and to comply with duct requirements as applicable to fittings. Except as otherwise indicated on the Drawings, fabricate elbows with centerline radius equal to

associated duct width; and fabricate to include turning vanes in elbows where shorter radius is necessary. Limit angular tapers to 30° for diverging concentric transition and 60° for converging concentric transition unless otherwise shown on the Drawings.

D. Fabricate ductwork with accessories installed during fabrication to the greatest extent possible.

E. The penetration of fire rated walls with fire dampers and fire/smoke dampers shall be installed per New York City Construction Codes.

F. Fabrication of Stainless Steel Ducts
   1. Gages of stainless steel sheets used for ductwork shall be the same as those specified for galvanized steel sheets, unless otherwise noted.
   2. Use minimum No. 18 gage except as where noted otherwise.
   3. Use stainless steel reinforcing members for ducts in finished spaces and galvanized steel in unfinished spaces.

PART 3 - EXECUTION

3.1 EXECUTION REQUIREMENTS

A. Refer to DDC General Conditions for execution requirements.

3.2 INSTALLATION

A. Install ductwork to allow maximum headroom. Properly seam, brace, stiffen, support and render ducts mechanically airtight where defined on the drawings. Adjust ducts to suit job conditions. Dimensions may be changed as approved, if cross sectional area is maintained.

B. Provide necessary transformation pieces, and flexible fabric connections for ductwork connected to air handling units or air inlet and outlet devices.

C. Field Fabrication: Complete fabrication of work at project as necessary to match shop-fabricated or factory-fabricated work to accommodate installation requirements.

D. Routing: Locate ductwork runs, except as otherwise indicated on the Drawings, vertically and horizontally and avoid diagonal runs wherever possible. Drawings are essentially diagrammatic. Provide offsets, rises, drops, all other items, accessories and necessary work as required to fit structure, avoid obstruction, and retain clearances, headroom openings and passageways. Hold ducts close to walls, overhead construction, columns, and other structural and permanent enclosure elements of building. Install parallel to or at right angles to walls and partitions, parallel to ceilings, level and plumb, unless shown otherwise. Limit clearance to 1/2" where furring is shown for enclosure or concealment of ducts, but allow for insulation thickness, if any. Where possible, locate insulated ductwork for 1" clearance outside of insulation. Wherever possible in finished and occupied spaces, conceal ductwork from view, by locating in mechanical shafts, hollow wall construction or above suspended ceilings. Do not encase horizontal runs in solid partitions, except as specifically shown on the Drawings. Coordinate layout with suspended ceiling and lighting fixtures and

similar finished work. Locate ducts with sufficient space around equipment to allow normal operating and maintenance activities.

E. Hangers and Supports

1. All ducts shall be as close to the ceiling as possible except where pipes or electric conduits are indicated as passing above them. They shall be installed within the enclosing work (hung ceiling or furring) and shall not interfere with its construction. Where one duct is run below another duct of greater width, the lower duct shall be hung from the support of the upper duct. The support of the upper duct shall be increased in thickness in such cases.
2. When the floor and/or roof slab construction for the Project is of conventional reinforced poured concrete type, the following directions apply: Overhead ductwork shall be supported by hangers secured to MSS Type 18 inserts before the floor slabs are poured or expansion type concrete anchors and fasteners, ITW Ramset/Red Head, Hilti, Powers Fasteners or approved equal after the floor slabs are poured and the forms have been removed.
3. Provide concrete inserts, expansion bolts, powder-actuated fasteners, or structural-steel fasteners appropriate for construction materials to which hangers are being attached. When used, install powder-actuated concrete fasteners and expansion bolts after concrete is placed and completely cured and metal deck has been erected. Powder-actuated concrete fasteners may be used for standard-weight aggregate concrete and for lightweight-aggregate concrete of not less than 3,000-psi strength. Do not use powder actuated fasteners for slabs less than 4” thick or for seismic restraints.
4. Metallic fasteners installed with electrically operated or powder-actuated tools used as upper hanger attachments shall be in accordance with the SMACNA Manual, with the following exceptions: Do not use powder-actuated drive pins or expansion nails. Do not attach powder-actuated or welded studs to structural steel less than 3/16” thick. Do not support a load, in excess of 250 lbs from any single welded or powder-actuated stud unless it is tested in place and confirmed by the manufacturer.
5. Expansion bolts shall be installed in snug fitting smoothly drilled holes after concrete is placed and completely cured and metal deck has been erected in accordance with the bolts manufacturer's installation instructions. Expansion bolts shall be installed so that the load acts on the bolts in shear and withdrawal. Expansion bolts shall be carefully located in order to eliminate the risk of damage to concrete, steel reinforcement, electrical conduits and any other embedded items. Install in concrete after concrete is placed and completely cured.
6. When the floor and/or roof slab construction for the Project is the composite metal deck type, consisting of corrugated sheet steel and reinforced concrete, the following directions apply: Overhead ductwork shall be supported by hangers secured to expansion bolts, beam clamps or to steel deck inserts shall be of a type that is supported by the concrete slab and not by the metal deck. These inserts shall be used for threaded rod type hangers. For hangers using flat bars, install inserts in accordance with SMACNA Duct Construction Standards, Third Edition, 2005, Chapter 5. Inserts must be installed before the concrete is poured. Manufacturers:
   a. Powers Fasteners “Bang’It”
   b. Hilti, Inc. Cast-In Anchor HCI-WF
   c. Mason
   d. Or approved equal.
7. When using powder-actuated fasteners in precast concrete, the manufacturer of the precast concrete shall be contacted to determine if the precast concrete can accept the installation of the fasteners.
8. The capacity of the fasteners and their installation should be as per the manufacturer's recommendation and installation instructions.

F. Electrical Equipment Spaces: Do not route ductwork through transformer vaults and their electrical equipment spaces and enclosures.

G. Penetrations: Where ducts pass through interior partitions and exterior walls, and are exposed to view, conceal space between construction opening and duct or duct insulation with sheet metal flanges of same gage as duct. Overlap opening on 4 sides by at least $1^1/_2$".

H. Coordination: Coordinate duct installations with installation of accessories, dampers, air handling unit, controls and other associated work of the ductwork system. Coordinate work of other trades affecting the ductwork. Penetrations made by all trades are to be sealed to an air-tight condition. Testing of ductwork shall be performed after all penetrations have been made, or redone if made after original testing.

I. Where the corner of an angle iron brace or joint member projects into a walking passage, the corner shall be mitered and shall be padded with 1/2" minimum thickness flexible foamed plastic material to minimize the possibility of injury to personnel.

3.3 HANGER ATTACHMENTS

A. General
1. Secure upper hanger attachments to structural steel or steel bar joists wherever possible.
2. Do not attach hangers to steel decks.
3. Metallic fasteners installed with electrically operated or powder driven tools may be used as hanger attachments in accordance with the SMACNA HVAC Duct Construction Standards, Third Edition-2005.
4. The use of the Gripple cable hanging systems shall be allowed as replacement for threaded rod or strap for both upper and lower attachments when the expansion bolt fasteners used with the Gripple cable hangers are certified by ICC for use in cracked concrete. Cable Hangers (Gripple) may be used to suspend all the ductwork. Select hangers for the type of structure and suspension. All parts (including the cable) shall be supplied, warranted and proof tested by the manufacturer. Follow recommended factory installation guidelines, do not exceed working loads.

B. Attachment to Steel Frame Construction: Provide intermediate structural steel members where required by ductwork support spacing. Select steel members for use as intermediate supports based on a minimum safety factor of 5.
1. Secure upper hanger attachments to steel bar joists at panel point of joists.
2. Do not drill holes in main structural steel members.

C. Attachment to Cast-in-Place Concrete:
1. Secure hangers to overhead construction with expansion bolts.
2. Secure hanger attachments required to be supported from wall or floor construction with single unit expansion bolts.

D. Hangers for ducts, 2 inches w.g. and under
1. Install hangers for ducts as specified in the SMACNA HVAC Duct Construction Standards, Third Edition-2005
2. Prime coat plain steel rods threaded at the site immediately after installation. Galvanized rods shall not be primed.

E. Hangers for ducts over 2 inches w.g.
   1. Install trapeze hangers for ducts as specified in the SMACNA HVAC Duct Construction Standards Third Edition-2005, Strap hangers shall not be used in this application.

3.4 OPENINGS IN WALLS AND FLOORS

A. In Walls: Sheet metal contractor shall provide sleeves for all exposed non-rated penetrations and shall provide collars for penetrations through rated construction. All structural openings (including lintels etc.) shall be provided by the Contractor.

B. In Floors and Roof:
   1. When the floor and/or roof slab construction for the project is the composite metal deck type, consisting of corrugated sheet steel and reinforced concrete, the following directions apply: Any opening, which is not framed by structural steel beams on all sides (refer to the structural steel drawings), and which is required in steel decking for the installation of HVAC work shall be provided by Contractor by installing the proper size form (prior to the pouring of concrete), and cutting the metal deck when the ducts are to be installed. Holes greater than 6" but less than 30" in any dimension will be reinforced. Holes 6" or less in dimension need not be reinforced.
   2. When the floor slab or roof slab for the project is of conventional reinforced poured concrete type, the following directions apply: Contractor shall form openings in the slabs for the passage of ducts. Provide the exact location and size (including clearances) of each opening required.

3.5 ADJUSTING AND CLEANING FOR START UP AND WARRANTEE

A. Clean dust and debris out of ductwork internally, unit by unit, as units are installed. Clean external surfaces of foreign substances that might cause corrosive deterioration of metal. Clean external surface where ductwork is to be painted that might interfere with painting or cause paint deterioration.

B. Paint all ductwork

C. Balancing: Seal any leaks in ductwork that become apparent during the balancing procedure.

3.6 IDENTIFICATION

A. Where the outside air intake for a supply fan system is isolated from the fan it serves, the connecting duct shall be identified at the intake. Identification shall consist of a 1/8" thick laminated plastic plate with 1/2" white core letters, designating the system it supplies. Plate shall be secured to the wall adjacent to the intake

3.7 FIELD QUALITY CONTROL

A. Leakage Tests: Perform leakage tests on ductwork operating in excess of 3”w.c. for all variable volume systems in accordance with SMACNA HVAC Air Duct Leakage Test Manual, 1st Edition-1985 and in accordance with the 2016 Edition of the New York State Energy Conservation Construction Code (as adopted as the New York City Energy Conservation Code by Local Law 01/11) and ASHRAE 90.1-2013.

All rectangular ductwork shall be sealed according to minimum Seal Class B, Construction Class 3" wc or higher (equipment external static pressure) or as indicated on the drawings and shall have Leakage Class 12. All rectangular ductwork shall be leak tested at equipment external static pressure but in no case less than 3" wc testing pressure.

3.8 CONNECTIONS

A. Contractor shall arrange to have the connections of metal ductwork to equipment and shall provide flexible connection for each ductwork connection to equipment mounted on vibration isolators, and/or equipment containing rotating machinery.

B. Coordinate as necessary to ensure that access doors have been provided in hung ceilings and any other required places for proper operation and maintenance.

END OF SECTION 23 31 13

SECTION 23 57 00 - HEAT EXCHANGERS FOR HVAC

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum and (5) the Contract [City of New York Standard Construction Contract].

1.2 SUMMARY

A. Provide plate heat exchangers as shown on the Drawings and as needed for a complete and proper installation; product specific requirements are contained herein.

1.3 RELATED SECTIONS

A. Section 23 22 16 - STEAM AND CONDENSATE PIPING SPECIALTIES

B. Section 23 05 23 - GENERAL DUTY VALVES FOR HVAC PIPING

C. Section 23 05 53 - IDENTIFICATION FOR HVAC PIPING AND EQUIPMENT

1.4 SUBMITTAL PROCEDURES

A. Refer to DDC General Conditions Section 01 33 00 “Submittal Procedures” for all submittals.

1.5 SUBMITTALS

A. Product Data: Submit manufacturer's product data for plate heat exchangers including capacity, performance charts, test data, materials, dimensions, weights, and installation instructions. Plate type heat exchangers utilizing water shall be certified per AHRI 400 per Table C403.2.3(10) of the 2016 New York City Energy Conservation Code (NYCECC) and Table 6.8.1-8 of ASHRAE 90.1-2013. Plate type heat exchangers utilizing fluids other than water (such as glycols) are not included in the AHRI certification program. For glycol heat exchangers, performance shall be verified by data furnished by the manufacturer (reference Section C403.2.3 of the 2016 NYCECC and Section 6.4.1.4d of ASHRAE 90.1-2013).

B. Shop Drawings

1. Provide shop drawings indicating the assembly-type, mounting details, location of the unit and all connection Details.

C. Quality Control Submittals

1. Manufacturer's certified data report, Form No. U-1, for ASME unfired pressure vessels.
2. Contractor’s start-up and demonstration affidavit

D. Maintenance Data

1. Maintenance Manual

1.6 QUALITY ASSURANCE

A. Refer to DDC General Conditions.

B. All equipment or components of this specification section shall meet or exceed the requirements and quality of the items herein specified, or as denoted on the drawings.

C. Ensure equipment pressure ratings are at least equal to the system's maximum operating pressure at point where installed, but not less than specified.

D. Equipment manufacturer shall be a company specializing in manufacture, assembly, and field performance of provided equipment

E. Equipment provider shall be responsible for providing certified equipment start-up and field certified instruction session. New equipment start-up shall be for the purpose of determining equipment operation.

F. The materials, manufacturing methods and factory- testing of the plate exchanger units shall be in strict conformance with all applicable sections of the ASME code, and shall bear the standard ASME symbol.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to the site in such a manner as to protect the materials from shipping and handling damage. Provide materials on factory provide shipping skids and lifting lugs if required for handling. Materials that can be damaged by the elements should be packaged in such a manner that they could withstand short-term exposure to the elements during transportation.

B. Store materials in clean, dry place and protect from weather and construction traffic. Handle carefully to avoid damage.

PART 2 - PRODUCTS

2.1 GENERAL

A. Provide plate heat exchangers of the size and capacity indicated on the Drawings. Arrange frame to provide the number of channel stainless steel plates indicated. Provide plate heat exchangers complete with stainless steel saddles or mounting legs for securing the supports.

B. Heat exchanger shall meet types, sizes, capacities, and characteristics as scheduled on the Equipment Schedule drawings.

2.2 MATERIALS

A. Provide a plate and frame water-to-water type heat exchanger of the sizes and capacities noted on the Drawings Schedule. The heat exchanger shall consist of stainless steel heat transfer plates, steel end plates, and a stainless steel carrying bar or for units that have 2.5" or larger port connections, non-stainless steel carrying bar with stainless steel at the contact surfaces with the thermal plates. Heat exchanger shall be of single pass configuration. Unit's shall be specifically designed for 150 PSIG working pressure at 230ºF. Heat exchanger selection shall be optimized by the manufacturer to provide minimum heat transfer surface area requirements under specified capacity and pressure drops.

B. The plate heat exchanger shall be shipped to the site as completely assembled units. The heat exchanger shall be pressure tested and flushed clean at the factory prior to shipment. All nozzle connections shall be factory sealed prior to shipment to prevent the entrance of foreign matter into the heat exchanger during shipment, storage, and installation.

C. Corrugated channel steel plates shall be of type 316 Stainless Steel. Channel plate ports shall be double gasketed to prevent cross contamination of hot and cold side fluids. Gaskets shall be of a one-piece design formulated from Nitrile rubber. Plates shall be grooved to accept the gaskets and gasket clips to minimize movement.

D. Channel carrying and guide bar shall be stainless steel with zinc yellow chromate finish. For units that have 2.5" or larger port connections, the thermal plate contact surfaces of the carry and guide bar shall be stainless steel.

E. Flow through the plates shall be of a counter flow design to maximize the heat transfer capability of the unit.

F. Connections 2" and smaller shall be carbon steel NPT tappings. Connections 2½" and larger shall be studded port design to accept ANSI flange connection. Connection ports shall be integral to the frame or pressure plate.

G. Unit to be supplied with OSHA approved splash guard, enclosing exterior channel plate and gasketed surfaced. Heat exchanger shall be provided with the scheduled square footage of heat transfer area.

H. Unit shall be constructed in accordance with ASME Code Rules and shall have a manufacturer's data report for pressure vessels, form No. U-1. Form U-1 shall be furnished to the Commissioner for the City of New York. The ASME "U" symbol should also be stamped on the Heater Exchanger(s).

I. Heat exchanger manufacturer shall be ISO-9001 certified.

J. Insulation shall comply with ASHRAE 90.1-2013 and shall be suitable for the operating temperature. Surround entire heat exchanger except connections.

2.3 MANUFACTURERS

A. Manufacturer's data report for unfired pressure vessels, form No. U-1 as required by the provision of the ASME Code Rules, shall be furnished.

B. Manufacturers:

1. Bell & Gossett ITT; Fluid Handling Div.
2. Alfa Laval Thermal.
3. API Heat Transfer Inc.
4. Armstrong Pumps.
5. Invensys APV, Inc.
6. Mueller, Paul Company.
7. Polaris Plate Heat Exchangers.
8. Tranter PHE, Inc.
9. Or approved equal.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Refer to DDC General Conditions.

B. All components shall be installed in accordance with manufacturer's installation instructions.

C. Proper access space around the exchangers shall be left for servicing the components. Provide no less than the minimum recommended by the manufacturer. Clearances shall be maintained around all components so as to permit inspection, servicing, repair, replacement and visibility of all gauges. When units are installed or replaced, clearance shall be provided to allow access for inspection, maintenance and repair. Passageways around all sides of the units shall have an unobstructed width as required by the manufacturer.

D. Proper component start-up practices and procedures shall be followed on all components as recommended by the manufacturer.

E. All piping shall be brought to equipment connections in such a manner so as to prevent the possibility of any loads or stresses being applied to the connections or piping. All piping shall be fitted to the plate heat exchangers even though piping adjustments may be required after the pipe is installed.

F. Water Piping: Provide piping including union, shutoff valve, pressure gauge, and thermometer on inlet; union, shutoff valve, relief valve, pressure gauge, and thermometer on outlet. Pipe relief valve outlet to drain.

3.2 INTERDISCIPLINARY TESTS AND FUNCTIONAL PERFORMANCE TESTS

A. The Contractor shall perform the manufacturer's interdisciplinary pre-start/start-up tests and functional performance tests and shall submit affidavit that all tests have been successfully completed. Contractor shall then demonstrate the equipment.

3.3 INSTRUCTION

A. The Building personnel shall be instructed on the operation and maintenance of the system. All instruction shall be a minimum of 4 hours.

END OF SECTION 23 57 00

SECTION 26 05 00 - COMMON WORK RESULTS FOR ELECTRICAL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum and (5) the Contract (City of New York Standard Construction Contract).

1.2 ELECTRICAL EQUIPMENT AND INSTALLATIONS

A. All electrical equipment shall be the latest of the current year in material and workmanship, and shall be the type or model called for in these Specifications.

B. Coordinate the installation of HVAC materials and equipment above ceilings with suspension system, light fixtures, and all other installations and accessories.

C. For purposes of clearness and legibility, electrical Drawings are essentially diagrammatic and size and location of equipment are drawn to scale wherever possible. The Drawings indicate size, connection points and routes of conduit. It is not intended, however, that all offsets, rises and drops are shown. Provide conduit runs as required to fit structure, avoid obstruction, and retain clearances, headroom openings and passageways. Conduits installed over any means of egress and access passageways must be 7'-6" clear inclusive of insulation.
   1. Location of items passing through roofing/ waterproofing membranes shall be in strict accordance with recommendations of the NRCA (National Roof Contractors Association) Manual to allow for proper flashing of items, including the following:
      a. No penetrations shall be made within 12" of any walls, parapets, roof curbs, expansion joints or any other projections (clear distance between penetration or equipment curb face shall be 12" minimum).
      b. Provide manufactured curb chases where multiple conduits enter at one location.
      c. Conduit/equipment supports that penetrate membranes shall be round or square/rectangular to allow proper flashing. Use of "kindorf" type supports is not permitted to penetrate membranes.
   2. Conduits at equipment must be done in a manner such that access around equipment is not impeded, such as at equipment platforms.

1.3 SUBMITTAL PROCEDURES

A. Refer to DDC General Conditions Section 01 33 00 "Submittal Procedures".

1.4 SUBMITTALS

A. Provide as outlined in each individual section of these Specifications, including:

1. Product Data: Submit manufacturer's product data for equipment including capacity, performance charts, test data, materials, dimensions, weights, and installation instructions.
2. Shop Drawings: Submit manufacture's shop drawings indicating dimensions, weight loading, required clearances, location, and method of assembly of components.
3. Submittals are mandatory as noted in the respective specifications. Schedules, installation instructions, startup manuals, operation and maintenance manuals, and shop drawings are always required to be submitted.

B. PRE-INSTALLATION CONFERENCE
1. Before the Electrical Work is scheduled to commence, a conference will be called at the site for the purpose of reviewing the Drawings and the Specifications and discussing requirements for the Work. Subcontractors/installers of other trades may also be required to attend to discuss coordination with their work. The Subcontractor shall send a conference agenda to all attendees prior to the scheduled date of the conference.
2. The Electrical Subcontractor shall attend pre-installation conferences of other trades for coordination of the work.

C. COORDINATION DRAWINGS
1. Coordination Drawings: The Electrical Subcontractor shall cooperate with the HVAC and P&D Systems Subcontractor in the development of the coordination drawings. The drawings, indicating ductwork, steam, hydronic & fuel piping, etc. shall be generated by the HVAC Subcontractor, who in turn is to provide them to the Electrical Subcontractor for the inclusion of electrical work in this coordination set. This is after the P&D Systems Subcontractors have entered their information in the set. The specified order in which the trade Subcontractors impose their work on the coordination drawings is not intended to grant priority to any one trade Subcontractor in the allocation of space. At the completion of this phase, hold a coordination meeting to eliminate any interference among the trades that the drawings indicate and to avoid any conflicts in installing the Work.

D. WORK IN EXISTING BUILDINGS
1. Removals, Replacements, Adjustments
   a. The Subcontractor shall remove, relocate, replace, adjust or adapt, all existing conduit, wiring and other electric equipment or apparatus, as required, to provide a complete installation.
   b. The Work shall include, providing all materials, all necessary extensions, connections, cuttings, repairing, adapting and other Work incidental thereto, together with such temporary connections as may be required to maintain service pending the completion of the permanent Work. All Work shall be left in good working order and in a condition equal to the adjacent new or existing Work.
2. Care in Removing Existing Conductors
   a. The Subcontractor shall use due care and diligence in removing existing conductors from existing conduits in order to prevent conductors from breaking and becoming an irretrievable obstruction within the conduits.
3. Cutting and Repairing
   a. Whenever the cutting, or drilling, or removal of any part of the structure (ceilings, walls, floors, shelving, bookcases, partitions, etc.), is required in order to remove, relocate, alter or install any article of electrical equipment (including conduits, boxes, fittings, lighting fixtures etc.), the Subcontractor shall perform all cutting, drilling, etc., and remove the section of structure required. After removal and installation of the electric equipment, the Subcontractor shall

repair the section of structure, as directed by the Commissioner, with new materials, equal to that of adjacent structure of the same type.

b. Note that in general, all holes through existing structures for conduit installation shall be core drilled, unless prior written approval is provided by the Commissioner.

c. Subcontractor shall use extreme care when core drilling to avoid damaging the existing infrastructure.

d. Whenever holes are cut in fire-rated walls or floor slabs in order to permit the installation of conduit or electrical equipment, these holes shall be repaired with material that will restore the fire rating of the wall or floor slab to its original condition.

e. The Subcontractor shall paint all repaired areas of the building. The paint shall match the paint of adjacent surface areas, or extend to the nearest architectural break-line, as directed.

f. Wherever any part of the structure is marred or damaged, the Subcontractor shall repair the damaged or marred areas of the structure.

g. Where a piece of electrical equipment is removed, the Subcontractor shall finish that part of the surface to match surroundings.

4. Damaged Apparatus: Should any damage, due to the execution of this Contract, occur to the furniture, fixtures, or any equipment or apparatus, such damage shall be properly repaired and/or replaced by the Subcontractor without additional cost to the City of New York.

5. Non-Interruption of Services

a. It is imperative that all existing services (electric, light, power, fire alarm, telecommunications, etc.) be kept in operation at all times, unless prior written approval is received from the Commissioner.

b. Provide fire watch services, as necessary, during disruption of fire alarm system.

E. GUARANTEES AND WARRANTIES

1. Refer to individual equipment specifications for warranty requirements.

a. Compile and assemble the warranties specified for Electrical work into a separated set of documents, tabulated and indexed for easy reference.

b. Provide complete warranty information for each item to include product or equipment including duration of warranty or bond; and names, addresses, and telephone numbers and procedures for filing a claim and obtaining warranty services.

c. Manufacturers' warranties shall be provided for all Electrical equipment and accessories.

d. All warranties are to start from the date of Substantial Completion.

F. OPERATIONS, INSTRUCTION, AND MAINTENANCE MANUALS

1. General

a. Refer to individual equipment specifications for maintenance manual additional requirements. In addition, include the following information:

b. Description of function, normal operating characteristics and limitations, performance curves, engineering data and tests, and complete nomenclature and commercial numbers of all replaceable parts.

c. Manufacturer's printed operating procedures to include start-up, break-in, routine and normal operating instructions; regulation, control, stopping, shut-down, and emergency instructions; and summer and winter operating instructions.

d. Maintenance procedures for routine preventative maintenance and troubleshooting; disassembly, repair, and reassemble; aligning and adjusting instructions.

e. Servicing instructions and lubrication charts and schedules.

2. Bind all the other Sections maintenance manuals in a single final Operating and Maintenance Manual, Systems Operation and Maintenance Manual.
3. Refer to individual equipment specifications for the additional instruction requirements.

G. CLEANING AND REPAIR
1. On completion of installation, inspect interior and exterior of installed equipment. Remove paint splatters and other spots. Vacuum dirt and debris; do not use compressed air to assist in cleaning. Repair exposed surfaces to match original finish.
2. Subcontractor shall not leave sharp exposed metal edges (bottom of threaded rods, electrical equipment supports, etc.) that could otherwise present safety hazards to the building's occupants/work staff.

PART 2 - PRODUCTS

2.1 SLEEVES FOR RACEWAYS AND CABLES

A. Steel Pipe Sleeves: ASTM A 53/A 53M, Type E, Grade B, Schedule 40, galvanized steel, plain ends.

B. Cast-Iron Pipe Sleeves: Cast or fabricated "wall pipe," equivalent to ductile-iron pressure pipe, with plain ends and integral waterstop, unless otherwise indicated.

C. Sleeves for Rectangular Openings: Galvanized sheet steel.
1. Minimum Metal Thickness:
   a. For sleeve cross-section rectangle perimeter less than 50 inches and no side more than 16 inches, thickness shall be 0.052 inch.
   b. For sleeve cross-section rectangle perimeter equal to, or more than, 50 inches and 1 or more sides equal to, or more than, 16 inches, thickness shall be 0.138 inch.

2.2 SLEEVE SEALS

A. Description: Modular sealing device, designed for field assembly, to fill annular space between sleeve and raceway or cable.
1. Product: Subject to compliance with requirements, comparable product by one of the following:
   a. Advance Products & Systems, Inc.
   b. Calpico, Inc.
   c. Metraflex Co.
   d. Pipeline Seal and Insulator, Inc.
   e. Link-Seal
   f. Or approved equal
2. Sealing Elements: EPDM interlocking links shaped to fit surface of cable or conduit. Include type and number required for material and size of raceway or cable.
3. Pressure Plates: Stainless steel. Include two for each sealing element.
4. Connecting Bolts and Nuts: Stainless steel of length required to secure pressure plates to sealing elements. Include one for each sealing element.

2.3 FIRESTOPPING:

A. Manufacturers:
1. Hilti Construction Chemicals, Inc., Tulsa, OK
2. The Carborundum Company, Niagara Falls, NY
3. 3M Fire Protection Products, St. Paul, MN
4. Tremco Commercial Sealants & Waterproofing, Beachwood, OH
5. Specified Technologies, Inc., Somerville, NJ
6. W. R. Grace & Co., Macungie, PA
7. RectorSeal Corp., Houston, TX
8. Or approved equal

B. Through-penetration firestop systems shall meet the requirements of ASTM E814 or UL 1479, which include the following:
1. Prevent flame pass-through.
2. Restrict temperature to not exceed 325°F over ambient on side of assembly opposite flames.
3. Provide a positive smoke seal.
4. Withstand hose stream test with a minimum positive pressure differential of 0.01 inch (2.49 pa.)
5. Provide an F rating of not less than the required fire rating of the wall penetrated.
6. Provide an F rating and a T rating for floor penetrations of not less than 1 hour but not less than the required fire rating of the floor penetrated, except as follows:
   a. Floor penetrations contained and located within the cavity of a wall do not require a T-rating.
   b. Metallic piping or tubing penetrating a single fire rated floor, having a maximum 6" diameter can be firestopped with concrete, grout or mortar of thickness to maintain the fire rating of the floor penetrated. No limit to the number of floors penetrated if the area of the aggregate area of penetration does not exceed 144 square inches in any 100 square feet of floor area.

C. Firestopping materials shall be asbestos-free, emit no toxic or combustible fumes and be capable of maintaining an effective barrier against flame, smoke, gas, and water in compliance with requirements of this Section.

D. Firestopping materials/systems shall be flexible to allow for normal movement of building structure and penetrating items(s) without affecting the adhesion or integrity of the system.

E. Firestopping materials shall not require hazardous waste disposal of used containers/packages.

F. On insulated pipe, the fire-rating classification must not require the removal of the insulation.

G. Firestopping materials shall be free of solvents. Shrinkage while curing shall not exceed shrinkage experienced during specified testing. Firestopping shall remain in complete contact with adjacent construction when fully cured

H. Nonmetallic, Shrinkage-Resistant Grout: ASTM C 1107, factory-packaged, nonmetallic aggregate grout, noncorrosive, nonstaining, mixed with water to consistency suitable for application and a 30-minute working time.

PART 3 - EXECUTION

3.1 EXECUTION REQUIREMENTS

A. Refer to DDC General Conditions for execution requirements.

3.2 COMMON REQUIREMENTS FOR ELECTRICAL INSTALLATION

A. Comply with NECA 1.

B. Measure indicated mounting heights to bottom of unit for suspended items and to center of unit for wall-mounting items.

C. Headroom Maintenance: If mounting heights or other location criteria are not indicated, arrange and install components and equipment to provide maximum possible headroom consistent with these requirements.

D. Equipment: Install to facilitate service, maintenance, and repair or replacement of components of both electrical equipment and other nearby installations. Connect in such a way as to facilitate future disconnecting with minimum interference with other items in the vicinity.

E. Right of Way: Give to piping systems installed at a required slope.

3.3 SLEEVE INSTALLATION FOR ELECTRICAL PENETRATIONS

A. Electrical penetrations occur when raceways, cables, wireways, cable trays, or busways penetrate concrete slabs, concrete or masonry walls, or fire-rated floor and wall assemblies.

B. Concrete Slabs and Walls: Install sleeves for penetrations unless core-drilled holes or formed openings are used. Install sleeves during erection of slabs and walls.

C. Use pipe sleeves unless penetration arrangement requires rectangular sleeved opening.

D. Fire-Rated Assemblies: Install sleeves for penetrations of fire-rated floor and wall assemblies unless openings compatible with firestop system used are fabricated during construction of floor or wall.

E. Cut sleeves to length for mounting flush with both surfaces of walls.

F. Extend sleeves installed in floors 2 inches above finished floor level.

G. Size pipe sleeves to provide 1/4-inch annular clear space between sleeve and raceway or cable, unless indicated otherwise.

H. Seal space outside of sleeves with grout for penetrations of concrete and masonry
   1. Promptly pack grout solidly between sleeve and wall so no voids remain. Tool exposed surfaces smooth; protect grout while curing.

I. Interior Penetrations of Non-Fire-Rated Walls and Floors: Seal annular space between sleeve and raceway or cable, using joint sealant appropriate for size, depth, and location of joint.

J. Fire-Rated-Assembly Penetrations: Maintain indicated fire rating of walls, partitions, ceilings, and floors at raceway and cable penetrations. Install sleeves and seal raceway and cable penetration sleeves with firestop materials.

K. Roof-Penetration Sleeves: Seal penetration of individual raceways and cables with flexible boot-type flashing units applied in coordination with roofing work.

L. Aboveground, Exterior-Wall Penetrations: Seal penetrations using steel pipe sleeves and mechanical sleeve seals. Select sleeve size to allow for 1-inch annular clear space between pipe and sleeve for installing mechanical sleeve seals.

M. Underground, Exterior-Wall Penetrations: Install cast-iron pipe sleeves. Size sleeves to allow for 1-inch annular clear space between raceway or cable and sleeve for installing mechanical sleeve seals.

3.4 SLEEVE-SEAL INSTALLATION

A. Install to seal exterior wall penetrations.

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

3.5 FIRESTOPPING

A. Install firestopping system in strict accordance with the manufacturer's instructions to obtain/maintain the fire-rating required at the specific location. The Subcontractor and the commissioner shall be immediately notified of conditions that will not allow the proper installation of the material to achieve the required rating, such as the annular space between the penetration and sleeve not being wide enough to meet the requirements of the assembly.

B. Provide escutcheons for piping at each side of penetration when subject to view and/or if required by the UL assembly.

END OF SECTION 26 05 00

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

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum and (5) the Contract (City of New York Standard Construction Contract).

1.2 SUMMARY

A. Section Includes:
   1. Building wires and cables rated 600 V and less.
   2. Connectors, splices, and terminations rated 600 V and less.

1.3 SUBMITTAL PROCEDURES

A. Refer to DDC General Conditions Section 01 33 00 “Submittal Procedures”.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Affidavit: Provide affidavit indicating all wiring used is less than one year old and UL listed. Contractor shall provide megger test for feeder run.

1.5 INFORMATIONAL SUBMITTALS

A. Field quality-control reports.

PART 2 - PRODUCTS

2.1 CONDUCTORS AND CABLES

A. Copper Conductors: Comply with NEMA WC 70/ICEA S-95-658.

B. Conductor Insulation: Comply with NEMA WC 70/ICEA S-95-658 for Type THHN-THWN.

C. Multi-conductor Cable: Comply with NEMA WC 70/ICEA S-95-658 for metal-clad cable, Type MC with ground wire.

D. Mineral Insulated Copper Sheathed (MI) cable: Comply with UL 2196 fire test, NFPA 130 wet location and low-smoke zero halogen requirements.

2.2 CONNECTORS AND SPLICES

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

2.3 SYSTEM DESCRIPTION

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

B. Comply with NFPA 70.

PART 3 - EXECUTION

3.1 EXECUTION REQUIREMENTS

A. Refer to DDC General Conditions for execution requirements.

3.2 CONDUCTOR MATERIAL APPLICATIONS

A. Feeders: Copper. Solid for No. 10 AWG and smaller; stranded for No. 8 AWG and larger.

B. Branch Circuits: Copper. Solid for No. 12 AWG and smaller; stranded for No. 10 AWG and larger, except VFC cable, which shall be extra flexible stranded.

3.3 CONDUCTOR INSULATION AND MULTICONDUCTOR CABLE APPLICATIONS AND WIRING METHODS

A. Exposed Feeders Type THHN-THWN, single conductors in raceway.

B. Exposed Branch Circuits: Type THHN-THWN, single conductors in raceway.

C. Branch Circuits Concealed in Ceilings, Walls, and Partitions: Type THHN-2-THWN-2, single conductors in raceway.

3.4 INSTALLATION OF CONDUCTORS AND CABLES

A. Complete raceway installation between conductor and cable termination points according to Section 260533 "Raceways and Boxes for Electrical Systems" prior to pulling conductors and cables.

B. Use manufacturer-approved pulling compound or lubricant where necessary; compound used must not deteriorate conductor or insulation. Do not exceed manufacturer's recommended maximum pulling tensions and sidewall pressure values.

C. Use pulling means, including fish tape, cable, rope, and basket-weave wire/cable grips, that will not damage cables or raceway.

D. Install exposed cables parallel and perpendicular to surfaces of exposed structural members, and follow surface contours where possible.

E. Support cables according to Section 260529 "Hangers and Supports for Electrical Systems."

3.5 CONNECTIONS

A. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A-486B.

B. Make splices, terminations, and taps that are compatible with conductor material and that possess equivalent or better mechanical strength and insulation ratings than unspliced conductors..
   1. Use oxide inhibitor in each splice, termination, and tap for aluminum conductors.

C. Wiring at Outlets: Install conductor at each outlet, with at least 12 inches of slack.

3.6 IDENTIFICATION

A. Identify and color-code conductors and cables

B. Identify each spare conductor at each end with identity number and location of other end of conductor, and identify as spare conductor.

3.7 SLEEVE AND SLEEVE-SEAL INSTALLATION FOR ELECTRICAL PENETRATIONS

A. Install sleeves and sleeve seals at penetrations of exterior floor and wall assemblies.

3.8 FIRESTOPPING

A. Apply firestopping to electrical penetrations of fire-rated floor and wall assemblies to restore original fire-resistance rating of assembly.

3.9 FIELD QUALITY CONTROL

A. Perform the following tests and inspections:
   1. After installing conductors and cables and before electrical circuitry has been energized, test conductors for compliance with requirements.

2. Perform each visual and mechanical inspection and electrical megger test. Certify compliance with test parameters.
3. Infrared Scanning: After Substantial Completion, but not more than 60 days after Final Acceptance, perform an infrared scan of each splice in conductors No. 3 AWG and larger. Remove box and equipment covers so splices are accessible to portable scanner. Correct deficiencies determined during the scan.
   a. Follow-up Infrared Scanning: Perform an additional follow-up infrared scan of each splice 11 months after date of Substantial Completion.
   b. Instrument: Use an infrared scanning device designed to measure temperature or to detect significant deviations from normal values. Provide calibration record for device.
   c. Record of Infrared Scanning: Prepare a certified report that identifies splices checked and that describes scanning results. Include notation of deficiencies detected, remedial action taken, and observations after remedial action.

B. Test and Inspection Reports: Prepare a written report to record the following:
   1. Procedures used.
   2. Results that comply with requirements.
   3. Results that do not comply with requirements and corrective action taken to achieve compliance with requirements.

C. Cables will be considered defective if they do not pass tests and inspections.

END OF SECTION 26 05 19

SECTION 26 05 26 - GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum and (5) the Contract (City of New York Standard Construction Contract).

1.2 SUMMARY

A. Section includes grounding and bonding systems and equipment.

1.3 ACTION SUBMITTALS

A. Refer to DDC General Conditions

B. Product Data: For each type of product indicated.

1.4 INFORMATIONAL SUBMITTALS

A. Qualification Data: For testing agency and testing agency's field supervisor.

B. Field quality-control reports.

1.5 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For grounding to include in emergency, operation, and maintenance manuals.
   1. Include the following:
      a. Instructions for periodic testing and inspection of grounding features at grounding connections for separately derived systems.
         1) Tests shall determine if ground-resistance or impedance values remain within specified maximums, and instructions shall recommend corrective action if values do not.
         2) Include recommended testing intervals.

1.6 QUALITY ASSURANCE

A. Refer to DDC General Conditions Section 01 40 00 “Quality Requirements”

B. Testing Agency Qualifications: .

1. Testing Agency's Field Supervisor: Certified by NETA to supervise on-site testing.

C. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

D. Comply with UL 467 for grounding and bonding materials and equipment

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers:
1. Burndy; Part of Hubbell Electrical Systems.
2. Dossert; AFL Telecommunications LLC.
3. ERICO International Corporation.
4. Fushi Copperweld Inc.
5. Galvan Industries, Inc.; Electrical Products Division, LLC.
6. ILSCO.
7. O-Z/Gedney; A Brand of the EGS Electrical Group.
8. Or approved equal.

2.2 SYSTEM DESCRIPTION

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

B. Comply with UL 467 for grounding and bonding materials and equipment.

2.3 CONDUCTORS

A. Insulated Conductors: Copper wire or cable insulated for 600 V unless otherwise required by Chapter 27 of the New York City Department of Buildings.

B. Bare Copper Conductors:
1. Solid Conductors: ASTM B 3.
2. Stranded Conductors: ASTM B 8.
3. Tinned Conductors: ASTM B 33.
1. Bonding Cable: 28 kcmil, 14 strands of No. 17 AWG conductor, 1/4 inch in diameter.
2. Bonding Conductor: No. 4 or No. 6 AWG, stranded conductor.
3. Bonding Jumper: Copper tape, braided conductors terminated with copper ferrules; 1-5/8 wide and 1/16 inch thick.

2.4 CONNECTORS

A. Listed and labeled by an NRTL acceptable to the New York City Department of Buildings for applications in which used and for specific types, sizes, and combinations of conductors and other items connected.

B. Bolted Connectors for Conductors and Pipes: Copper.

C. Welded Connectors: Exothermic-welding kits of types recommended by kit manufacturer for materials being joined and installation conditions.

D. Bus-Bar Connectors: Mechanical type, cast silicon bronze, solderless compression-type wire terminals, and long-barrel, two-bolt connection to ground bus bar.

PART 3 - EXECUTION

3.1 EXECUTION REQUIREMENTS

A. Refer to DDC General Conditions for execution requirements.

3.2 APPLICATIONS

A. Conductors: Install solid conductor for No. 8 AWG and smaller, and stranded conductors for No. 6 AWG and larger unless otherwise indicated.

B. Grounding Bus: Install in electrical equipment rooms, in rooms housing service equipment, and elsewhere as indicated.
   1. Install bus horizontally, on insulated spacers 2 inches minimum from wall, 6 inches above finished floor unless otherwise indicated.
   2. Where indicated on both sides of doorways, route bus up to top of door frame, across top of doorway, and down; connect to horizontal bus

C. Conductor Terminations and Connections:
   1. Pipe and Equipment Grounding Conductor Terminations: Bolted connectors.
   2. Connections to Structural Steel: Welded connectors.

3.3 GROUNDING AT THE SERVICE

A. Equipment grounding shall be connected to the ground bus. Install a main bonding jumper between the neutral and ground buses. Install a main bonding jumper between the neutral and ground buses.

3.4 EQUIPMENT GROUNDING

A. Install insulated equipment grounding conductors with all feeders and branch circuits.

B. Install insulated equipment grounding conductors with the following items, in addition to those required by NFPA 70:
   1. Feeders and branch circuits.
   2. Lighting circuits
   3. Receptacle circuits.
   4. Single-phase motor and appliance branch circuits.
   5. Three-phase motor and appliance branch circuits.
   6. Flexible raceway runs.
   7. Armored and metal-clad cable runs.
   8. Busway Supply Circuits: Install insulated equipment grounding conductor from grounding bus in the switchgear, switchboard, or distribution panel to equipment grounding bar terminal on busway.

3.5 INSTALLATION

A. Grounding Conductors: Route along shortest and straightest paths possible unless otherwise indicated. Avoid obstructing access or placing conductors where they may be subjected to strain, impact, or damage.

3.6 FIELD QUALITY CONTROL

A. Testing Agency: Engage a qualified testing agency to perform tests and inspections.

B. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect, test, and adjust components, assemblies, and equipment installations, including connections.

C. Tests and Inspections:
   1. After installing grounding system but before permanent electrical circuits have been energized, test for compliance with requirements.
   2. Inspect physical and mechanical condition. Verify tightness of accessible, bolted, electrical connections with a calibrated torque wrench according to manufacturer's written instructions.
   3. Test completed grounding system at each location where a maximum ground-resistance level is specified, at service disconnect enclosure grounding terminal, at ground test wells, and at individual ground rods. Make tests at ground rods before any conductors are connected.
      a. Measure ground resistance no fewer than two full days after last trace of precipitation and without soil being moistened by any means other than natural drainage or seepage and without chemical treatment or other artificial means of reducing natural ground resistance.
      b. Perform tests by fall-of-potential method according to IEEE 81.
   4. Prepare dimensioned Drawings locating each test well, ground rod and ground-rod assembly, and other grounding electrodes. Identify each by letter in alphabetical order, and key to the record of tests and observations. Include the number of rods driven and their depth at each location, and include observations of weather and other phenomena that may affect test results. Describe measures taken to improve test results.

D. Grounding system will be considered defective if it does not pass tests and inspections.

E. Prepare test and inspection reports.

F. Report measured ground resistances that exceed the following values:
   1. Power and Lighting Equipment or System with Capacity of 500 kVA and Less: 10 ohms.
   2. Power and Lighting Equipment or System with Capacity of 500 to 1000 kVA: 5 ohms.
   3. Power and Lighting Equipment or System with Capacity More Than 1000 kVA: 3 ohms.
   4. Power Distribution Units or Panelboards Serving Electronic Equipment: 1 ohm(s).
   5. Pad-Mounted Equipment: 5 ohms.
   6. Manhole Grounds: 10 ohms.

G. Excessive Ground Resistance: If resistance to ground exceeds specified values, notify Commissioner promptly and include recommendations to reduce ground resistance.

END OF SECTION 26 05 26

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SECTION 26 05 29 - HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum and (5) the Contract (City of New York Standard Construction Contract).

1.2 SUMMARY

A. Section includes:
   1. Hangers and supports for electrical equipment and systems.
   2. Construction requirements for concrete bases.

1.3 PERFORMANCE REQUIREMENTS

A. Rated Strength: Adequate in tension, shear, and pullout force to resist maximum loads calculated or imposed for this Project, with a minimum structural safety factor of five times the applied force.

1.4 SUBMITTAL PROCEDURES

A. Refer to DDC General Conditions Section 01 33 00 “Submittal Procedures”.

B. Product Data: For steel slotted support systems.

C. Shop Drawings: Signed and sealed by a Qualified Professional Engineer, licensed in the State of New York. Show fabrication and installation details and include calculations for the following:
   1. Trapeze hangers. Include Product Data for components.
   2. Steel slotted channel systems. Include Product Data for components.
   3. Equipment supports.

1.5 INFORMATIONAL SUBMITTALS

A. Welding certificates.

1.6 QUALITY ASSURANCE

A. Refer to DDC General Conditions Section 01 40 00 “Quality Requirements”.

B. Welding: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."

PART 2 - PRODUCTS

2.1 SUPPORT, ANCHORAGE, AND ATTACHMENT COMPONENTS

A. Steel Slotted Support Systems: Comply with MFMA-4, factory-fabricated components for field assembly.
   1. Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include the following:
      a. Allied Tube & Conduit.
      b. Cooper B-Line, Inc.; a division of Cooper Industries.
      c. ERICO International Corporation.
      d. GS Metals Corp.
      e. Thomas & Betts Corporation.
      f. Unistrut; Tyco International, Ltd.
      g. Wesanco, Inc.
      h. Or approved equal.
   2. Metallic Coatings: Hot-dip galvanized after fabrication and applied according to MFMA-4.
   3. Nonmetallic Coatings: Manufacturer's standard PVC, polyurethane, or polyester coating applied according to MFMA-4.
   4. Painted Coatings: Manufacturer's standard painted coating applied according to MFMA-4.
   5. Channel Dimensions: Selected for applicable load criteria.

B. Raceway and Cable Supports: As described in NECA 1 and NECA 101.

C. Conduit and Cable Support Devices: Steel hangers, clamps, and associated fittings, designed for types and sizes of raceway or cable to be supported.

D. Structural Steel for Fabricated Supports: ASTM A 36/A 36M, steel plates, shapes, and bars; black and galvanized.

E. Mounting, Anchoring, and Attachment Components: Items for fastening electrical items or their supports to building surfaces include the following:
   1. Powder-Actuated Fasteners: Threaded-steel stud, for use in hardened portland cement concrete, steel, or wood, with tension, shear, and pullout capacities appropriate for supported loads and building materials where used.
      a. Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include the following:
         1) Hilti Inc.
         2) ITW Ramset/Red Head; a division of Illinois Tool Works, Inc.
         3) MKT Fastening, LLC.
         4) Simpson Strong-Tie Co., Inc.; Masterset Fastening Systems Unit.
         5) Or approved equal.

2. Mechanical-Expansion Anchors: Insert-wedge-type, stainless steel, for use in hardened portland cement concrete with tension, shear, and pullout capacities appropriate for supported loads and building materials in which used.
   a. Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include the following:
      1) Cooper B-Line, Inc.; a division of Cooper Industries.
      2) Empire Tool and Manufacturing Co., Inc.
      3) Hilti Inc.
      4) ITW Ramset/Red Head; a division of Illinois Tool Works, Inc.
      5) MKT Fastening, LLC.
      6) Or approved equal.
3. Concrete Inserts: Steel or malleable-iron, slotted support system units similar to MSS Type 18; complying with MFMA-4 or MSS SP-58.
4. Clamps for Attachment to Steel Structural Elements: MSS SP-58, type suitable for attached structural element.
5. Through Bolts: Structural type, hex head, and high strength. Comply with ASTM A 325.
6. Toggle Bolts: All-steel springhead type.
7. Hanger Rods: Threaded steel.

2.2 FABRICATED METAL EQUIPMENT SUPPORT ASSEMBLIES

A. Description: Welded or bolted, structural-steel shapes, shop or field fabricated to fit dimensions of supported equipment.

B. Materials: Comply with requirements for steel shapes and plates.

PART 3 - EXECUTION

3.1 EXECUTION REQUIREMENTS

A. Refer to DDC General Conditions for execution requirements.

3.2 APPLICATION

A. Refer to DDC General Conditions.

B. Comply with NECA 1 and NECA 101 for application of hangers and supports for electrical equipment and systems except if requirements in this Section are stricter.

C. Maximum Support Spacing and Minimum Hanger Rod Size for Raceway: Space supports for EMT, IMC, and RMC as required by NFPA 70. Minimum rod size shall be 1/4 inch in diameter.

D. Multiple Raceways or Cables: Install trapeze-type supports fabricated with steel slotted support system, sized so capacity can be increased by at least 25 percent in future without exceeding specified design load limits.
   1. Secure raceways and cables to these supports with two-bolt conduit clamps.

E. Spring-steel clamps designed for supporting single conduits without bolts may be used for 1-1/2-inch and smaller raceways serving branch circuits and communication systems above suspended ceilings and for fastening raceways to trapeze supports.

3.3 SUPPORT INSTALLATION

A. Comply with NECA 1 and NECA 101 for installation requirements except as specified in this Article.

B. Raceway Support Methods: In addition to methods described in NECA 1, EMT, IMC, and RMC may be supported by openings through structure members, as permitted in NFPA 70.

C. Strength of Support Assemblies: Where not indicated, select sizes of components so strength will be adequate to carry present and future static loads within specified loading limits. Minimum static design load used for strength determination shall be weight of supported components plus 200 lb.

D. Mounting and Anchorage of Surface-Mounted Equipment and Components: Anchor and fasten electrical items and their supports to building structural elements by the following methods:
   1. To New Concrete: Bolt to concrete inserts.
   2. To Masonry: toggle-type bolts on hollow masonry units and expansion anchor fasteners on solid masonry units.
   3. To Existing Concrete: Expansion anchor fasteners.
   4. Instead of expansion anchors, powder-actuated driven threaded studs provided with lock washers and nuts may be used in existing standard-weight concrete 4 inches thick or greater. Do not use for anchorage to lightweight-aggregate concrete or for slabs less than 4 inches thick.
   5. To Steel: clamps (MSS Type 19, 21, 23, 25, or 27) complying with MSS SP-69.
   6. Items Mounted on Hollow Walls and Nonstructural Building Surfaces: Mount cabinets, panelboards, disconnect switches, control enclosures, pull and junction boxes, transformers, and other devices on slotted-channel racks attached to substrate by means that meet seismic-restraint strength and anchorage requirements.

E. Drill holes for expansion anchors in concrete at locations and to depths that avoid reinforcing bars.

3.4 INSTALLATION OF FABRICATED METAL SUPPORTS

A. Comply with installation requirements for site-fabricated metal supports.

B. Cut, fit, and place miscellaneous metal supports accurately in location, alignment, and elevation to support and anchor electrical materials and equipment.

C. Field Welding: Comply with AWS D1.1/D1.1M.

3.5 CONCRETE BASES

A. Construct concrete bases of dimensions indicated but not less than 4 inches (100 mm) larger in both directions than supported unit, and so anchors will be a minimum of 10 bolt diameters from edge of the base.

B. Use 3000-psi, 28-day compressive-strength concrete. Concrete materials, reinforcement, and placement requirements are specified in Section 03 30 00 "Cast-in-Place Concrete."

C. Anchor equipment to concrete base.
   1. Place and secure anchorage devices. Use supported equipment manufacturer's setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
   2. Install anchor bolts to elevations required for proper attachment to supported equipment.
   3. Install anchor bolts according to anchor-bolt manufacturer's written instructions.

END OF SECTION 26 05 29

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SECTION 26 05 33 - RACEWAYS AND BOXES FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum and (5) the Contract (City of New York Standard Construction Contract).

1.2 SUMMARY

A. Section Includes:
   1. Metal conduits, tubing, and fittings.
   2. Boxes, enclosures, and cabinets.

1.3 SUBMITTAL PROCEDURES

A. Refer to DDC General Conditions Section 01 33 00 “Submittal Procedures”.

1.4 SUBMITTAL APPLICATIONS

A. Product Data: For metal conduits and fittings, hinged-cover enclosures, and cabinets.

B. Shop Drawings: For custom enclosures and cabinets. Include plans, elevations, sections, and attachment details.

1.5 INFORMATIONAL SUBMITTALS

A. Coordination Drawings: Conduit routing plans, drawn to scale, on which the following items are shown and coordinated with each other, using input from installers of items involved:
   1. Structural members in paths of conduit groups with common supports.
   2. HVAC and plumbing items and architectural features in paths of conduit groups with common supports.

PART 2 - PRODUCTS

2.1 METAL CONDUITS, TUBING, AND FITTINGS

A. Listing and Labeling: Metal conduits, tubing, and fittings shall be listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

B. NECA NEIS 111 – National Electrical Installation Standard for Installing Nonmetallic Raceways

C. RGS: Comply with ANSI and UL

D. EMT: Comply with ANSI C80.3 and UL 797.

E. Fittings for Metal Conduit: Comply with NEMA FB 1 and UL 514B.
   1. Fittings for EMT:
      a. Material: Steel.
      b. Type: compression.
   2. Expansion Fittings: Steel to match conduit type, complying with UL 651, rated for environmental conditions where installed, and including flexible external bonding jumper.
   3. Coating for Fittings for PVC-Coated Conduit: Minimum thickness of 0.040 inch, with overlapping sleeves protecting threaded joints.

F. Joint Compound for IMC, GRC, or ARC: Approved, as defined in NFPA 70, by the New York City Department of Buildings for use in conduit assemblies, and compounded for use to lubricate and protect threaded conduit joints from corrosion and to enhance their conductivity.

G. Contractor shall provide pre-painted conduit where factory can match colors with existing building conditions.

2.2 BOXES, ENCLOSURES, AND CABINETS

A. General Requirements for Boxes, Enclosures, and Cabinets: Boxes, enclosures, and cabinets installed in wet locations shall be listed for use in wet locations.

B. Sheet Metal Outlet and Device Boxes: Comply with NEMA OS 1 and UL 514A.

C. Cast-Metal Outlet and Device Boxes: Comply with NEMA FB 1, aluminum, Type FD, with gasketed cover.

D. Small Sheet Metal Pull and Junction Boxes: NEMA OS 1.

E. Cast-Metal Access, Pull, and Junction Boxes: Comply with NEMA FB 1 and UL 1773, galvanized, cast iron with gasketed cover.

F. Weatherproof cast-Metal Access, Pull, and Junction Boxes: Comply with NEMA FB 1 and UL 1773, galvanized, cast iron with gasketed cover.

G. Device Box Dimensions: 4 inches square by 2-1/8 inches deep.

H. Hinged-Cover Enclosures: Comply with UL 50 and NEMA 250, Type 1 or Type 3R with continuous-hinge cover with flush latch unless otherwise indicated.
   1. Metal Enclosures: Steel, finished inside and out with manufacturer's standard enamel.
   2. Interior Panels: Steel; all sides finished with manufacturer's standard enamel.

I. Cabinets:
   1. Hinged door in front cover with flush latch and concealed hinge.
   2. Key latch to match panelboards.

3. Metal barriers to separate wiring of different systems and voltage.
4. Accessory feet where required for freestanding equipment.

PART 3 - EXECUTION

3.1 EXECUTION REQUIREMENTS

A. Refer to DDC General Conditions for execution requirements.

3.2 RACEWAY APPLICATION

A. Refer to DDC General Conditions.

B. Indoors: Apply raceway products as specified below unless otherwise indicated.
1. Exposed, Not Subject to Physical Damage: EMT.
2. Exposed, Not Subject to Severe Physical Damage: EMT.
3. Exposed and Subject to Severe Physical Damage Rigid steel conduit. Raceway locations include the following:
a. Mechanical rooms.
4. Damp or Wet Locations: Rigid steel conduit.
5. Boxes and Enclosures: NEMA 250, Type 1, except use NEMA 250, Type 4 stainless steel in damp or wet locations.

C. Minimum Raceway Size: 3/4-inch trade size.

D. Raceway Fittings: Compatible with raceways and suitable for use and location.
1. Rigid and Intermediate Steel Conduit: Use threaded rigid steel conduit fittings unless otherwise indicated. Comply with NEMA FB 2.10.
2. EMT: Use compression, steel fittings fittings. Comply with NEMA FB 2.10.
3. Flexible Conduit: Use only fittings listed for use with flexible conduit. Comply with NEMA FB 2.20.

E. Do not install aluminum conduits, boxes, or fittings in contact with concrete or earth.

3.3 INSTALLATION

A. Comply with NECA 1 and NECA 101 for installation requirements except where requirements on Drawings or in this article are stricter. Comply with NECA 102 for aluminum conduits. Comply with NFPA 70 limitations for types of raceways allowed in specific occupancies and number of floors.

B. Keep raceways at least 6 inches away from parallel runs of flues and steam or hot-water pipes. Install horizontal raceway runs above water and steam piping.

C. Comply with requirements in Section 260529 "Hangers and Supports for Electrical Systems" for hangers and supports.

D. Arrange stub-ups so curved portions of bends are not visible above finished slab.

E. Install no more than the equivalent of three 90-degree bends in any conduit run except for control wiring conduits, for which fewer bends are allowed. Support within 12 inches of changes in direction.

F. Conceal conduit and EMT within finished walls, ceilings, and floors unless otherwise indicated. Install conduits parallel or perpendicular to building lines.

G. Support conduit within 12 inches of enclosures to which attached.

H. Raceways Embedded in Slabs:
   1. Run conduit larger than 1-inch trade size, parallel or at right angles to main reinforcement. Where at right angles to reinforcement, place conduit close to slab support. Secure raceways to reinforcement at maximum 10-foot intervals.
   2. Arrange raceways to cross building expansion joints at right angles with expansion fittings.
   3. Arrange raceways to keep a minimum of 2 inches of concrete cover in all directions.
   4. Do not embed threadless fittings in concrete unless specifically approved by Commissioner for each specific location.
   5. Change from ENT GRC before rising above floor.

I. Threaded Conduit Joints, Exposed to Wet, Damp, Corrosive, or Outdoor Conditions: Apply listed compound to threads of raceway and fittings before making up joints. Follow compound manufacturer's written instructions.

J. Coat field-cut threads on PVC-coated raceway with a corrosion-preventing conductive compound prior to assembly.

K. Raceway Terminations at Locations Subject to Moisture or Vibration: Use insulating bushings to protect conductors including conductors smaller than No. 4 AWG.

L. Terminate threaded conduits into threaded hubs or with locknuts on inside and outside of boxes or cabinets. Install bushings on conduits up to 1-1/4-inch trade size and insulated throat metal bushings on 1-1/2-inch trade size and larger conduits terminated with locknuts. Install insulated throat metal grounding bushings on service conduits.

M. Install pull wires in empty raceways. Use polypropylene or monofilament plastic line with not less than 200-lb tensile strength. Leave at least 12 inches of slack at each end of pull wire. Cap underground raceways designated as spare above grade alongside raceways in use.

N. Install raceway sealing fittings at accessible locations according to NFPA 70 and fill them with listed sealing compound.

O. Install devices to seal raceway interiors at accessible locations. Locate seals so no fittings or boxes are between the seal and the following changes of environments. Seal the interior of all raceways at the following points:
   1. Where conduits pass from warm to cold locations, such as boundaries of refrigerated spaces.
   2. Where otherwise required by NFPA 70.

P. Expansion-Joint Fittings:
   1. Install in each run of aboveground RNC that is located where environmental temperature change may exceed 30 deg F and that has straight-run length that exceeds 25 feet.
   2. Install type and quantity of fittings that accommodate temperature change listed for each of the following locations:
      a. Outdoor Locations Not Exposed to Direct Sunlight: 125 deg F (70 deg C) temperature change.
      b. Outdoor Locations Exposed to Direct Sunlight: 155 deg F (86 deg C) temperature change.
      c. Indoor Spaces Connected with Outdoors without Physical Separation: 125 deg F (70 deg C) temperature change.
   3. Install fitting(s) that provide expansion and contraction for at least 0.00041 inch per foot of length of straight run per degree F of temperature change for PVC conduits.
   4. Install expansion fittings at all locations where conduits cross building or structure expansion joints.
   5. Install each expansion-joint fitting with position, mounting, and piston setting selected according to manufacturer's written instructions for conditions at specific location at time of installation. Install conduit supports to allow for expansion movement.
   6. 'E-Loc' mechanical couplings shall be used to join HDPE conduits and bends. The couplings or adaptors shall permit easy cable passage in both directions and be tight to prevent entry of water. They shall provide a flush continuous inside diameter at the joint. The travel distance inside each half of a mechanical coupling body must be sufficient to accommodate the potential maximum thermal lineal expansion of each conduit section attached. (About 1 in./100ft./10F)
   7. Fusion bonding (joints) shall be done as per HDPE conduit manufacturer's instructions. The fused joints shall develop a tensile strength equal to that of the conduit itself

Q. Flexible Conduit Connections: Comply with NEMA RV 3. Use a maximum of 72 inches of flexible conduit for equipment subject to vibration, noise transmission, or movement; and for transformers and motors.
   1. Use LFMC in damp or wet locations subject to severe physical damage.
   2. Use LFMC or LFNC in damp or wet locations not subject to severe physical damage.

R. Mount boxes at heights indicated on Drawings. If mounting heights of boxes are not individually indicated, give priority to ADA requirements. Install boxes with height measured to center of box unless otherwise indicated.

S. Locate boxes so that cover or plate will not span different building finishes.

T. Fasten junction and pull boxes to or support from building structure. Do not support boxes by conduits.

U. Set metal floor boxes level and flush with finished floor surface.

V. HDPE conduit terminating in an electric manhole, vault or box (other than in URD Construction) shall end approximately 8 feet outside the underground structure. It shall then be joined through a precast concrete adapter to precast concrete ducts or through a standard E-Loc Coupling to steel conduit (for service only) entering into the underground structure

3.4 INSTALLATION OF UNDERGROUND CONDUIT

A. Direct-Buried Conduit:

1. Excavate trench bottom to provide firm and uniform support for conduit. Prepare trench bottom as specified for pipe less than 6 inches in nominal diameter.
2. Install backfill as specified.
3. After installing conduit, backfill and compact. Start at tie-in point, and work toward end of conduit run, leaving conduit at end of run free to move with expansion and contraction as temperature changes during this process. Firmly hand tamp backfill around conduit to provide maximum supporting strength. After placing controlled backfill to within 12 inches of finished grade, make final conduit connection at end of run and complete backfilling with normal compaction as specified.
4. Install manufactured duct elbows for stub-up at poles and equipment and at building entrances through floor unless otherwise indicated. Encase elbows for stub-up ducts throughout length of elbow.
5. Install manufactured rigid steel conduit elbows for stub-ups at poles and equipment and at building entrances through floor.
    a. Couple steel conduits to ducts with adapters designed for this purpose, and encase coupling with 3 inches of concrete for a minimum of 12 inches on each side of the coupling.
    b. For stub-ups at equipment mounted on outdoor concrete bases and where conduits penetrate building foundations, extend steel conduit horizontally a minimum of 60 inches from edge of foundation or equipment base. Install insulated grounding bushings on terminations at equipment.

3.5 INSTALLATION OF UNDERGROUND HANDHOLES AND BOXES

A. Install handholes and boxes level and plumb and with orientation and depth coordinated with connecting conduits to minimize bends and deflections required for proper entrances.

B. Unless otherwise indicated, support units on a level bed of crushed stone or gravel, graded from 1/2-inch sieve to No. 4 sieve and compacted to same density as adjacent undisturbed earth.

C. Elevation: In paved areas, set so cover surface will be flush with finished grade. Set covers of other enclosures 1 inch above finished grade.

D. Install handholes with bottom below frost line, below grade.

E. Field-cut openings for conduits according to enclosure manufacturer's written instructions. Cut wall of enclosure with a tool designed for material to be cut. Size holes for terminating fittings to be used, and seal around penetrations after fittings are installed.

3.6 SLEEVE AND SLEEVE-SEAL INSTALLATION FOR ELECTRICAL PENETRATIONS

A. Install sleeves and sleeve seals at penetrations of exterior walls.

3.7 FIRESTOPPING

A. Install firestopping at penetrations of wall assemblies.

3.8 PROTECTION

A. Protect coatings, finishes, and cabinets from damage and deterioration.
   1. Repair damage to galvanized finishes with zinc-rich paint recommended by manufacturer.
   2. Repair damage to PVC coatings or paint finishes with matching touchup coating recommended by manufacturer.

END OF SECTION 26 05 33

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SECTION 26 05 53 - IDENTIFICATION FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum and (5) the Contract (City of New York Standard Construction Contract).

1.2 SUMMARY

A. Section Includes:
1. Identification for raceways.
2. Identification of power and control cables.
3. Identification for conductors.
4. Warning labels and signs.
5. Instruction signs.
6. Equipment identification labels.
7. Miscellaneous identification products.

1.3 SUBMITTAL PROCEDURES

A. Refer to DDC General Conditions Section 01 33 00 “Submittal Procedures”.

1.4 ACTION SUBMITTALS

A. Refer to DDC General Conditions.

B. Product Data: For each electrical identification product indicated.

1.5 QUALITY ASSURANCE

A. Refer to DDC General Conditions Section 01 40 00 “Quality Requirements”.

B. Comply with ANSI A13.1.

C. Comply with NFPA 70.

D. Comply with 29 CFR 1910.144 and 29 CFR 1910.145.

E. Comply with ANSI Z535.4 for safety signs and labels.

F. Adhesive-attached labeling materials, including label stocks, laminating adhesives, and inks used by label printers, shall comply with UL 969.

PART 2 - PRODUCTS

2.01 POWER RACEWAY IDENTIFICATION MATERIALS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   a. T&B
   b. Advance Products & Systems, Inc.
   c. CALPICO, Inc.
   d. Metraflex Company (The).
   e. Or approved equal.

B. Comply with ANSI A13.1 for minimum size of letters for legend and for minimum length of color field for each raceway size.

C. Colors for Raceways Carrying Circuits at 600 V or Less:
   1. Black letters on an orange field.
   2. Legend: Indicate voltage and system or service type.

D. Self-Adhesive Vinyl Labels for Raceways Carrying Circuits at 600 V or Less: Preprinted, flexible label laminated with a clear, weather- and chemical-resistant coating and matching wraparound adhesive tape for securing ends of legend label.

E. Snap-Around Labels for Raceways Carrying Circuits at 600 V or Less: Slit, pretensioned, flexible, preprinted, color-coded acrylic sleeve, with diameter sized to suit diameter of raceway or cable it identifies and to stay in place by gripping action.

F. Snap-Around, Color-Coding Bands for Raceways Carrying Circuits at 600 V or Less: Slit, pretensioned, flexible, solid-colored acrylic sleeve, 2 inches long, with diameter sized to suit diameter of raceway or cable it identifies and to stay in place by gripping action.

G. Write-On Tags: Polyester tag, 0.010 inch thick, with corrosion-resistant grommet and cable tie for attachment to conductor or cable.
   1. Marker for Tags: Permanent, waterproof, black ink marker recommended by tag manufacturer.
   2. Marker for Tags: Machine-printed, permanent, waterproof, black ink marker recommended by printer manufacturer.

2.02 ARMORED AND METAL-CLAD CABLE IDENTIFICATION MATERIALS

A. Comply with ANSI A13.1 for minimum size of letters for legend and for minimum length of color field for each raceway and cable size.

B. Colors for Raceways Carrying Circuits at 600 V and Less:
   1. Black letters on an orange field.
   2. Legend: Indicate voltage and system or service type.

C. Self-Adhesive Vinyl Labels: Preprinted, flexible label laminated with a clear, weather- and chemical-resistant coating and matching wraparound adhesive tape for securing ends of legend label.

D. Self-Adhesive Vinyl Tape: Colored, heavy duty, waterproof, fade resistant; 2 inches wide; compounded for outdoor use.

2.2 POWER AND CONTROL CABLE IDENTIFICATION MATERIALS

A. Comply with ANSI A13.1 for minimum size of letters for legend and for minimum length of color field for each raceway and cable size.

B. Self-Adhesive Vinyl Labels: Preprinted, flexible label laminated with a clear, weather- and chemical-resistant coating and matching wraparound adhesive tape for securing ends of legend label.

C. Write-On Tags: Polyester tag, 0.010 inch thick, with corrosion-resistant grommet and cable tie for attachment to conductor or cable.
   1. Marker for Tags: Permanent, waterproof, black ink marker recommended by tag manufacturer.
   2. Marker for Tags: Machine-printed, permanent, waterproof, black ink marker recommended by printer manufacturer.

D. Snap-Around Labels: Slit, pretensioned, flexible, preprinted, color-coded acrylic sleeve, with diameter sized to suit diameter of raceway or cable it identifies and to stay in place by gripping action.

E. Snap-Around, Color-Coding Bands: Slit, pretensioned, flexible, solid-colored acrylic sleeve, 2 inches long, with diameter sized to suit diameter of raceway or cable it identifies and to stay in place by gripping action.

2.3 CONDUCTOR IDENTIFICATION MATERIALS

A. Color-Coding Conductor Tape: Colored, self-adhesive vinyl tape not less than 3 mils thick by 1 to 2 inches wide.

B. Self-Adhesive Vinyl Labels: Preprinted, flexible label laminated with a clear, weather- and chemical-resistant coating and matching wraparound adhesive tape for securing ends of legend label.

C. Marker Tapes: Vinyl or vinyl-cloth, self-adhesive wraparound type, with circuit identification legend machine printed by thermal transfer or equivalent process.

D. Write-On Tags: Polyester tag, 0.010 inch thick, with corrosion-resistant grommet and cable tie for attachment to conductor or cable.
   1. Marker for Tags: Permanent, waterproof, black ink marker recommended by tag manufacturer.
   2. Marker for Tags: Machine-printed, permanent, waterproof, black ink marker recommended by printer manufacturer.

E. Color and Printing:
   1. Comply with ANSI Z535.1 through ANSI Z535.5.
   2. Inscriptions for Red-Colored Tapes: ELECTRIC LINE, HIGH VOLTAGE.

F. Tag: Type I:
1. Pigmented polyolefin, bright-colored, continuous-printed on one side with the inscription of the utility, compounded for direct-burial service.
2. Thickness: 4 mils.
3. Weight: 18.5 lb/1000 sq. ft.
4. 3-Inch Tensile According to ASTM D 882: 30 lbf, and 2500 psi.

G. Tag: Type ID:
1. Detectable three-layer laminate, consisting of a printed pigmented polyolefin film, a solid aluminum-foil core, and a clear protective film that allows inspection of the continuity of the conductive core, bright-colored, continuous-printed on one side with the inscription of the utility, compounded for direct-burial service.
2. Overall Thickness: 5 mils.
3. Foil Core Thickness: 0.35 mil.
4. Weight: 28 lb/1000 sq. ft..
5. 3-Inch Tensile According to ASTM D 882: 70 lbf, and 4600 psi.

2.4 WARNING LABELS AND SIGNS

A. Comply with NFPA 70 and 29 CFR 1910.145.

B. Self-Adhesive Warning Labels: Factory-printed, multicolor, pressure-sensitive adhesive labels, configured for display on front cover, door, or other access to equipment unless otherwise indicated.

C. Baked-Enamel Warning Signs:
1. Preprinted aluminum signs, punched or drilled for fasteners, with colors, legend, and size required for application.
2. 1/4-inch grommets in corners for mounting.
3. Nominal size, 7 by 10.

D. Metal-Backed, Butyrate Warning Signs:
1. Weather-resistant, nonfading, preprinted, cellulose-acetate butyrate signs with 0.0396-inch galvanized-steel backing; and with colors, legend, and size required for application.
2. 1/4-inch grommets in corners for mounting.
3. Nominal size, 10 by 14 inches.

E. Warning label and sign shall include, but are not limited to, the following legends:
1. Multiple Power Source Warning: "DANGER - ELECTRICAL SHOCK HAZARD - EQUIPMENT HAS MULTIPLE POWER SOURCES."
2. Workspace Clearance Warning: "WARNING - OSHA REGULATION - AREA IN FRONT OF ELECTRICAL EQUIPMENT MUST BE KEPT CLEAR FOR 36 INCHES."

2.5 INSTRUCTION SIGNS

A. Coordinate this article with Drawings.

B. Engraved, laminated acrylic or melamine plastic, minimum 1/16 inch thick for signs up to 20 sq. inches and 1/8 inch thick for larger sizes.
   1. Engraved legend with black letters on white face.
   2. Punched or drilled for mechanical fasteners.
   3. Framed with mitered acrylic molding and arranged for attachment at applicable equipment.

C. Adhesive Film Label: Machine printed, in black, by thermal transfer or equivalent process. Minimum letter height shall be 3/8 inch.

D. Adhesive Film Label with Clear Protective Overlay: Machine printed, in black, by thermal transfer or equivalent process. Minimum letter height shall be 3/8 inch. Overlay shall provide a weatherproof and UV-resistant seal for label.

2.6 EQUIPMENT IDENTIFICATION LABELS

A. Adhesive Film Label with Clear Protective Overlay: Machine printed, in black, by thermal transfer or equivalent process. Minimum letter height shall be 3/8 inch. Overlay shall provide a weatherproof and UV-resistant seal for label.

B. Self-Adhesive, Engraved, Laminated Acrylic or Melamine Label: Adhesive backed, with white letters on a dark-gray background. Minimum letter height shall be 3/8 inch.

C. Stenciled Legend: In nonfading, waterproof, black ink or paint. Minimum letter height shall be 1 inch.

D. Contractor shall provide typed written panel directories with plastic cover for protection.

2.7 MISCELLANEOUS IDENTIFICATION PRODUCTS

A. Paint: Comply with requirements in painting Sections for paint materials and application requirements. Select paint system applicable for surface material and location (exterior or interior).

B. Fasteners for Labels and Signs: Self-tapping, stainless-steel screws or stainless-steel machine screws with nuts and flat and lock washers.

PART 3 - EXECUTION

3.1 EXECUTION REQUIREMENTS

A. Refer to DDC General Conditions for execution requirements.

3.2 INSTALLATION

A. Refer to DDC General Conditions.

B. Location: Install identification materials and devices at locations for most convenient viewing without interference with operation and maintenance of equipment.

C. Apply identification devices to surfaces that require finish after completing finish work.

D. Self-Adhesive Identification Products: Clean surfaces before application, using materials and methods recommended by manufacturer of identification device.

E. Attach signs and plastic labels that are not self-adhesive type with mechanical fasteners appropriate to the location and substrate.

F. System Identification Color-Coding Bands for Raceways and Cables: Each color-coding band shall completely encircle cable or conduit. Place adjacent bands of two-color markings in contact, side by side. Locate bands at changes in direction, at penetrations of walls and floors, at 50-foot maximum intervals in straight runs, and at 25-foot maximum intervals in congested areas.

G. Painted Identification: Comply with requirements for surface preparation and paint application.

3.3 IDENTIFICATION SCHEDULE

A. Accessible Raceways and Metal-Clad Cables, 600 V or Less, for Service, Feeder, and Branch Circuits More Than 30 A, and 120 V to ground: Install labels at 10-foot maximum intervals.

B. Accessible Raceways and Cables within Buildings: Identify the covers of each junction and pull box of the following systems with self-adhesive vinyl labels with the wiring system legend and system voltage. System legends shall be as follows:
   1. Power.

C. Power-Circuit Conductor Identification, 600 V or Less: For conductors in pull and junction boxes, use color-coding conductor tape to identify the phase.
   1. Color-Coding for Phase Identification, 600 V or Less: Use colors listed below for ungrounded feeder and branch-circuit conductors.
      a. Color shall be factory applied.
      b. Colors for 208/120-V Circuits:
         1) Phase A: Black.
         2) Phase B: Red.
         3) Phase C: Blue.
      c. Field-Applied, Color-Coding Conductor Tape: Apply in half-lapped turns for a minimum distance of 6 inches from terminal points and in boxes where splices or taps are made. Apply last two turns of tape with no tension to prevent possible unwinding. Locate bands to avoid obscuring factory cable markings.

D. Install instructional sign including the color-code for grounded and ungrounded conductors using adhesive-film-type labels.

E. Conductors to Be Extended in the Future: Attach write-on to conductors and list source.
   1. Tape for both direct-buried cables and cables in raceway.

F. Warning Labels for Indoor Cabinets, Boxes, and Enclosures for Power and Lighting: Baked-enamel warning signs.
   1. Comply with 29 CFR 1910.145.
   2. Identify system voltage with black letters on an orange background.
   3. Apply to exterior of door, cover, or other access.
   4. For equipment with multiple power or control sources, apply to door or cover of equipment including, but not limited to, the following:
      a. Controls with external control power connections.

G. Operating Instruction Signs: Install instruction signs to facilitate proper operation and maintenance of electrical systems and items to which they connect. Install instruction signs with approved legend where instructions are needed for system or equipment operation.

H. Equipment Identification Labels: On each unit of equipment, install unique designation label that is consistent with wiring diagrams, schedules, and the Operation and Maintenance Manual. Apply labels to disconnect switches and protection equipment, central or master units, control panels. Systems include power, unless equipment is provided with its own identification.
   1. Labeling Instructions:
      a. Indoor Equipment: Engraved, laminated acrylic or melamine label. Unless otherwise indicated, provide a single line of text with 1/2-inch- high letters on 1-1/2-inch- high label; where two lines of text are required, use labels 2 inches high.
      b. Elevated Components: Increase sizes of labels and letters to those appropriate for viewing from the floor.
      c. Unless provided with self-adhesive means of attachment, fasten labels with appropriate mechanical fasteners that do not change the NEMA or NRTL rating of the enclosure.

END OF SECTION 26 05 53

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SECTION 26 08 00 - COMMISSIONING FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum and (5) the Contract [City of New York Standard Construction Contract].

1.2 SUMMARY

A. Commissioning consists of systematically documenting that specified components and systems have been installed and started up properly and then functionally tested to verify and document proper operation through all sequences of operation and conditions. In addition, instruction of The City of New York's Operations Personnel will be verified and final project O&M Documents will be reviewed for completeness.

1.3 QUALITY ASSURANCE

A. Reference Standards:
   1. OSHA Part 1910 ; Subpart S. 1910.308.
   2. American National Standards Institute : ANSI
   3. American Society for Testing and Materials : ASTM
   4. Association of Edison Illuminating Companies : AEIC
   5. Institute of Electrical and Electronics Engineers : IEEE
   6. Insulated Cable Engineers Association : ICEA
   7. National Electrical Manufacturers Association : NEMA
   8. International Electrical Testing Association : NETA
   9. National Fire Protection Association (NFPA) : NFPA
   10. National Electrical Code (NEC).

B. All inspections and tests shall use the following references.
   1. Contract Specifications.
   2. Contract Drawings.
   3. Manufacturer's instruction manuals and approved shop drawings for applicable equipment.
   4. International Electrical Testing Association (NETA) Standards for Electrical Power Equipment and Systems.
      a. NETA ATS (Acceptance testing specifications)
      b. NETA ECS (Electrical commissioning specifications)
      c. NETA ETT (Electrical testing technicians)
      d. NETA MTS (Maintenance testing specifications)

PART 2 - PRODUCTS

2.1 EQUIPMENT AND INSTRUMENTS for Cx process

A. The Contractor shall furnish all tools, instruments, laptops, calibrated meters, software programs, personnel, and services required to perform the commissioning process. This includes providing the connection to systems to be tested, temporary alterations for test purposes, calibrations, operation of the test equipment & instrumentation and generating test results (as required), and the restoration of equipment/systems to original operating condition. A list of all tools and equipment to be used during commissioning shall be submitted to the CxA for approval. The Contractor shall furnish necessary utilities for the commissioning process.

B. 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. Proprietary test equipment (and software) shall become the property of The City of New York upon completion of the commissioning process.

2.2 COMMISSIONING DOCUMENTATION

A. All documentation for the commissioning process shall be entered into the CxA's commissioning project progress tracking software tool. The Contractor will be allowed web-based access to the software upon request. Additionally, the Contractor may download the CxA's mobile application to a tablet format. The mobile application is available in Apple, Android, and Windows format. There is no fee associated with the software or the mobile application. The Contractor shall allow sufficient time to familiarize himself with the operation of the software.

PART 3 - EXECUTION

3.1 GENERAL

A. The Contractor shall complete all phases of work so the systems can be started, tested, balanced, and acceptance procedures undertaken. This includes the complete installation of all equipment, materials, pipe, duct, wire, insulation, controls, etc., per the contract documents and related directives, clarifications, and change orders.

3.2 PARTICIPATION IN ACCEPTANCE PROCEDURES

A. The Contractor shall provide skilled technicians to startup and debug all systems within the project contracted work. These same technicians shall be made available to assist the Commissioning Authority in completing the commissioning program. Work schedules, time required for testing, etc., shall be requested by the Commissioning Authority and coordinated by the Contractor. The Contractor shall ensure that the qualified technician(s) are available and present during the agreed upon schedules and of sufficient duration to complete the necessary tests, adjustments, and/or problem resolutions.

B. System performance problems and discrepancies may require additional technician time, Commissioning Authority time, reconstruction of systems, and/or replacement of system components. At no additional cost to The City of New York, the additional technician time shall be made available for subsequent commissioning periods until the required system performance is obtained.

C. The Commissioning Authority reserves the right to question the appropriateness and qualifications of the technicians relative to each item of equipment, system, and/or sub-system. Qualifications of technicians shall include expert knowledge relative to the specific equipment involved and a willingness to work with the Commissioning Authority. The Contractor shall provide adequate documentation and tools to start-up and test the equipment, system, and/or sub-system.

3.3 DEFICIENCY RESOLUTION

A. In some systems, inaccurate adjustments, misapplied equipment, and/or deficient performance under varying loads will result in additional work being required to commission the systems. This work shall be completed under the direction of The Commissioner, with input from the Contractor, equipment supplier, and Commissioning Authority. Whereas all members shall have input and the opportunity to discuss, debate, and work out problems, The City of New York and/or Commissioner shall have final jurisdiction over any additional work done to achieve performance.

B. Corrective work shall be completed in a timely fashion to permit the completion of the commissioning process. Experimentation to demonstrate system performance may be permitted. If the Commissioning Authority deems the experimentation work to be ineffective or untimely as it relates to the commissioning process, the Commissioning Authority shall notify The Commissioner, indicating the nature of the problem, expected steps to be taken, and suggested deadline(s) for completion of activities. If the deadline(s) pass without resolution of the problem, The Commissioner reserves the right to obtain supplementary services and/or equipment to resolve the problem. Contractor shall provide supplementary services incurred to solve problems at no additional cost to the City of New York.

3.4 ADDITIONAL COMMISSIONING

A. Additional commissioning activities may be required after system adjustments, replacements, etc., are completed. The Contractor, suppliers, and Commissioning Authority shall complete this work at no additional cost to the City of New York.

3.5 SUSTAINING SYSTEM READINESS

A. The Commissioning Authority will prepare and issue to the Contractor Pre-Functional Checklist (PFC) forms for each system or major piece of equipment to be commissioned. Pre-Functional Checklists are important to ensure that the equipment and systems are installed and operational. It ensures that Functional Performance and Integrated Systems Testing may proceed without unnecessary delays. Each piece of equipment is to receive full pre-functional checkout by the Contractors. No sampling strategies are to be used. The Pre-Functional Checklists for all equipment related to any given system must be successfully completed prior to formal Functional Performance and Integrated Systems Testing of the system.

B. The Commissioning Authority will monitor and track the completion of the Pre-Functional Checklist forms.

C. The Contractor shall complete the Pre-Functional Checklists, provided by the Commissioning Authority, as follows:
   1. Pre-Functional Checklists should be maintained in a binder(s) or electronically at the Contractor's project site office and are subject to review for comparison between the completion level of the Checklists and the status of the work during site observation visits by the Commissioning Authority.
   2. Complete Section 1 "Equipment Delivery" of the Pre-Functional Checklist after equipment delivery to the site.
   3. Complete Section 2 "Equipment Installation" of the Pre-Functional Checklist after the equipment installation is complete.
   4. Complete Section 3 "Equipment Start-up" of the Pre-Functional Checklist after the equipment has been successfully started. The Contractor is to forward copies of all manufacturer's start-up forms and reports to the Commissioning Authority.
   5. Complete Section 4 "SCADA/Power Monitoring/Lighting Control Integration" of the Pre-Functional Checklist after the equipment and systems control configuration and integration process has been completed.
   6. Complete Section 5 "Notification for Testing" of the Pre-Functional Checklist after the equipment if fully operational and ready for Functional Performance and Integrated Systems Testing.
   7. Completed and signed Pre-Functional Checklists are a pre-requisite for commencing Functional Performance and Integrated Systems Testing. If field observation indicates a significant deviation from actual installation conditions, all checklists will be returned to the Contractor for revision and resubmission at no additional cost to the City.
   8. Only individuals that have direct knowledge and witnessed that a line item task on the Pre-Functional Checklist was actually performed shall initial or check off that item.

D. The Contractor shall clearly list any outstanding items from the Pre-Functional Checklists and/or manufacturer start-up reports and checklists that were not completed successfully in the Comments section of the applicable Pre-Functional Checklist. The Commissioning Authority will review any items/issues listed and will address them through discussion with the Commissioner and Contractor prior to proceeding with Functional Performance and Integrated Systems Testing.

E. The Contractor shall develop detailed start-up plans for all equipment. These plans shall be reviewed by the Commissioner and the Commissioning Authority for completeness and verification that the manufacturer-recommended procedures have been completed.
   1. 1. The Contractor responsible for the installation and start-up of the equipment is responsible for developing the start-up plan by combining the Pre-Functional Checklist with the manufacturer's detailed start-up and checkout procedures and any required quality assurance testing.
   2. 2. The Contractor shall maintain an updated and annotated copy of the start-up plan that shall be accessible for review by the Commissioner and the Commissioning Authority at periodic intervals.
   3. 3. The completed start-up procedures shall be provided along with the completed Pre-Functional Checklists to the Commissioning Authority prior to the Contractor's certification that the systems are ready for Functional Performance and Integrated Systems Testing.

3.6 FUNCTIONAL PERFORMANCE TESTING

A. The CxA will provide to the Contractor functional performance tests (FPTs). The Contractor shall review the test procedures, so that proper preparation may occur. The Contractor shall execute the FPT document and prove to the Commissioner and the Cx Authority that the performance of the Electrical Systems achieves the performance level identified. Refer to all other specification sections for other systems that may need to be tested. The following systems are to be commissioned but not limited to:
   1. Lighting Controls
   2. Electrical Panels

B. Detailed testing shall be performed on all installed equipment and systems to ensure that operation and performance conform to contract documents. All tests shall be witnessed by the Commissioning Authority. The following testing is required as part of the commissioning process:
   1. Verification tests are comprised of a full range of checks and tests to determine that all components, equipment, systems, and interfaces between systems operate in accordance with contract documents. This includes all operating modes, interlocks, control responses, and specific responses to abnormal or emergency conditions.
   2. Functional performance tests (FPT) shall determine if the electrical system is in accordance with the finalized design intent.

3.7 ROLES AND RESPONSIBILITIES

A. Contractor
   1. Assure acceptable representation, with the means and authority to prepare and coordinate execution of the electrical system commissioning program as described in the contract documents.
   2. Attend commissioning meetings scheduled by the CA.
   3. Coordinate inclusion of commissioning activities in the construction schedule.
   4. Complete Pre-Functional Checklists and manufacturer's pre-startup checklists prior to scheduling pre-testing of the electrical system.
   5. Issue a notice that electrical pre-testing has been scheduled.
   6. Monitor, respond, and remedy deficiencies identified in the Corrective Issue Reports (CIRs) distributed by the CxA in order to expedite corrective actions necessary to achieve design intent.
   7. Facilitate resolution of deficiencies that were identified by observations or performance testing.
   8. Participate in the Functional Performance Tests as required to achieve design intent.
   9. Participate in O&M Instruction as required by DDC General Conditions.
   10. Include requirements for submittal data, O & M data, and instruction in each purchase order or sub-contract written.
   11. Ensure participation of major equipment manufacturers in appropriate instruction and testing activities.
   12. Attend Construction Phase coordination meeting scheduled by the Commissioning Authority.
   13. Assist the Commissioning Authority in all verification and functional performance tests.
   14. Prepare preliminary schedule and include the following tasks that will be executed: electrical system orientation and inspections, O&M manual submission, instruction sessions, NETA testing, equipment start-up, and task completion for use by the Commissioning Authority. Update schedule as appropriate throughout the construction period.
   15. Attend initial instruction session.
   16. Conduct electrical system orientation and inspection at the equipment placement completion stage.
   17. Update drawings to the record condition to date, and review with the Commissioning Authority.

18. Gather O&M data on all equipment and assemble in binders as required by DDC General Conditions.
19. Notify the Commissioning Authority a minimum of two weeks in advance, so that witnessing equipment and system start-up and testing can begin.
20. Notify the Commissioning Authority a minimum of two weeks in advance, of the time for start of the initial energization.
21. Participate in and schedule vendors to participate in the instruction sessions.
22. Provide written notification to the Commissioning Authority that the following work has been completed in accordance with the contract documents, and that the equipment, systems, and sub-systems are operating as required.
    a. Electrical equipment and all contracted equipment.
    b. Dedicated and Non-dedicated systems using the air handling units for smoke control.
    c. Fire detection and smoke detection devices furnished under other divisions of this specification as they affect the operation of the smoke control systems.
    d. Control systems (SCADA) that control electrical equipment are functioning.
    e. Provide a complete set of as-built records to the Commissioning Authority.

3.8 STARTUP

A. The Contractor shall follow the start-up and initial checkout procedures listed in this specification and in DDC General Conditions. Division 26 has start-up responsibility and is required to complete systems and sub-systems so that they are fully functional and meet the design objectives of the Contract Documents. The commissioning procedures and functional testing do not relieve, lessen this responsibility, or shift that responsibility partially to the Commissioning Agent or The City of New York.

B. Functional testing is intended to begin upon completion of a system. Functional testing may proceed prior to the completion of systems, or sub-systems at the discretion of the CxA and the Contractor. Beginning system testing before full completion does not relieve the Contractor from fully completing the system, including all Pre-Functional Checklists as soon as possible.

3.9 COMMISSIONING STATUS TRACKING

A. The Contractor shall verify that the Tag designation as well as the number (count) of each unit listed is correct against those contained within the initial Contract Documents.

END OF SECTION 26 08 00

SECTION 26 09 23 - LIGHTING CONTROL DEVICES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum and (5) the Contract (City of New York Standard Construction Contract).

1.2 SUMMARY

A. Section Includes:
   1. Digital Load Controllers (Room Controllers)
   2. Digital Motion Sensors
   3. Digital Daylight Sensors
   4. Digital Manual Controls
   5. Digital Auxiliary Input/Output Interface modules
   6. Configuration Tools
   7. Network Interfaces

B. Related Sections:
   1. Section 262726 "Wiring Devices" for wall-box dimmers, and manual light switches.

C. The general operation of the lighting controls shall be in compliance with 2014 NYC building codes, Ashrae 90.1 2013 as amended by NYCECC.

D. Provide Gateway Free Distributed Bluetooth Mesh based Digital Lighting Controls (controls) System as indicated on the drawings and as specified herein. The controls shall consist of a series of local standalone digital load controllers, sensors and wall stations dedicated to the control of their assigned areas. All controls strategies being deployed in each area will be stored on the devices themselves with the option of integrating spaces into the cloud which allows for centralized or remote system modification and management, BMS integration and metered energy monitoring The Networked Lighting Control System's components will allow the system to operate totally independent of the client's network and continue operations if connection to the cloud is interrupted.

E. The control system will provide time-based, sensor-based (e.g. occupancy/vacancy and daylight sensors) and/or manual control (via wall stations and/or app) as dictated by sequence of operations. called out for in these documents. The controls shall turn lighting loads ON/OFF, and shall dim the lighting where indicated. Lighting control zones shall consist of one or more Bluetooth enabled intelligent lighting control devices capable of stand-alone operation as well as a cloud based centralized remotely accessible control hub.

F. Distributed Networked Lighting Control System shall accommodate the square-footage coverage requirements for each area controlled utilizing digital load controllers, digital occupancy/vacancy sensors, digital daylighting sensors, digital switches, and accessories that suit the required lighting and electrical system parameters.

G. Lighting control zones shall consist of one or more Bluetooth enabled intelligent lighting control devices capable of stand-alone operation as well as a cloud based centralized remotely accessible control hub. Digital devices (Load Controllers, Sensors & Switches) make up infrastructure to meet control sequences within the space. The BLE Mesh based Global network will allow for local as well as centralized and remote control. All control strategies must be stored on the devices themselves. As such any interruption in communications with the cloud as well as a single devices failure will not impact the designated sequence of operations in any way.

H. System shall be capable of using a cloud-based software management program to enable remote system control, energy monitoring, system analytics, time schedule creation, load and sensor adjustments and remote start-up. Building automation system (BAS) Integration agnostic of protocols available via Open API.

I. System shall conform to requirements of NFPA 70.

J. System shall be listed under UL sections 916 and/or 508.

K. System shall comply with FCC emission standards specified in part 15, sub-part J for commercial and residential application.

1.3 SUBMITTAL PROCEDURES

A. Refer to DDC General Conditions Section 01 33 00 “Submittal Procedures”.

B. Product Data: For each type of product. (general device descriptions, dimensions, electrical specifications, wiring details, nomenclature)

C. Shop drawings
   1. System one-line diagram showing all number and types of switches and sensors.
   2. Typical wiring diagram for each component.
   3. Component Layout & Wiring Diagrams
   4. Sensor Coverage Patterns

1.4 INFORMATIONAL SUBMITTALS

A. Field quality-control reports.

1.5 CLOSEOUT SUBMITTALS

A. Project Record Documents: Provide As-Builts that showcase the locations of all devices

B. Operation and maintenance Manual:
   1. Include approved Shop Drawings and Product Data
   2. Include Sequence of Operation, identifying operation for each room or space
   3. Include manufacturer's maintenance information
   4. Operation and Maintenance Data: Include detailed information on device programming and setup
   5. Include startup and test reports

PART 2 - PRODUCTS

2.1 DIGITAL LOAD CONTROLLERS (Room Controllers):

A. The Bluetooth enabled controllers shall include the following features:
1. Standard junction box mounting.
2. Each connected load shall be capable of any of the following behaviors: Manual ON, Automatic ON, Automatic ON to 50 percent, Automatic ON to Preset level or last level set.
3. UL 2043 plenum rated.
4. Manual override via wall stations or Apple and Android Phones or Tablets.
5. Power supply to power the digital load controller itself and the peripheral sensors and controls connected to the In-Room Network.
6. 16 Amp Dual voltage (120/277 VAC, 60 Hz) controller capable of controlling 0 to 10V Loads.
7. Must accommodate Class 1 and Class 2 Environments
8. Zero cross relay
9. All control sequences resides in the individual room controller or plug load controller and shall be retained in non-volatile FLASH memory within the controller itself.

B. ON/OFF/Dimming Load Controllers

1. Controllers shall include the following:
   a. Single 16 Amp relay per device.
   b. Each dimming output channel has the ability to set both high end and low end trim to match the true dynamic range of the connected LED driver.
   c. One dimming output per relay.
      - 0-10V Dimming: Where indicated, one 0-10 volt analog output per relay for control of compatible LED drivers. The 0-10 volt output shall automatically close upon loss of power to the Controller to assure full light output from the controlled lighting.
      - Line Voltage, Forward or Reverse Phase Dimming: Where indicated, can be accommodated with integration with a Phase to 0 to 10V conversion kit.to control compatible LED drivers, ELV, and incandescent loads.
2. Dual Channel Devices to support Tunable White functionality
   a. Each load shall have be independently configurable preset ON level for Normal Hours and After Hours events as well as be associated with other schedules to allow different dimmed levels to be established.

2.2 DIGITAL MOTION SENSORS

A. General
1. Sensors shall be available in Fixture, Junction, Ceiling or Wall Mounted configurations.
2. Sensors shall use either passive infrared (PIR), dual technology, ultrasonic or microwave sensing technology for detecting room occupancy.
3. Sensors shall be able to function in concert with other sensors in order to accommodate necessary coverage patterns in larger areas.

B. Features: Sensors shall be provided with the following features:
   1. Programmable Sensitivity Adjustment, Occupancy/Vacancy Mode, Time Delay, Occupied & Unoccupied Light Levels, On to Previous Dim Levels.
   2. Dual-Technology Sensors shall have independent configurable trigger modes to choose proper technology according to space use to eliminate false-triggers.
   3. Each sensor may be programmed to control zones or individual fixtures with-in defined space.
   4. Each sensor shall allow programming via iOS or Android enabled phones or tablets locally or remotely. Must also allow for programing a single or multiple sensors concurrently via network applications.
   5. Where applicable certain sensors should combine OCC/VAC and Daylight sensing capabilities

2.3 DIGITAL DAYLIGHT SENSORS

A. Daylight sensors shall be provided with the following features:
   1. Digital daylighting sensors shall work with Fixture or Zonal Controller to provide automatic switching or dimming daylight harvesting capabilities for any load type integrated into the system.
   2. Sensor must be programmable to work in an open and closed loop environment.
   3. Daylighting sensors shall be interchangeable without the need for rewiring.
   4. Sensor light level range shall be from 1-700 LUX
   5. For dimming daylight harvesting, the daylight sensor shall provide the option, when the daylight contribution is sufficient, of turning lights OFF or dimming lights to a field-selectable minimum level.
   6. Delay shall be incorporated into the photocell to prevent rapid response to passing clouds.
   7. Daylight sensors shall have an independently configurable fade rate for both increasing and decreasing light level
   8. Daylight Sensors shall provide adjustable cut-off time (0-120 minutes). Cut-off time is defined by the number of selected minutes the load is at the minimum output before the load turns off.
   9. Optional wall switch override shall allow occupants to reduce lighting level to increase energy savings or, if permitted by Commissioner, raise lighting levels for a selectable period of time or cycle of occupancy.
   10. Each sensor shall allow local or remote programming via an iOS or Android phone or tablet.

2.4 DIGITAL MANUAL CONTROLS

A. Dimmer Switches
   1. On/Off controls
   2. Raise/lower dimming adjustment controls.
   3. Wall, Glass or Movable Mounting Options
   4. Able to support 3 or 4 way switch applications

B. Digital Scene Switches
   1. Scene switches allow for 4 Preset light levels as well as dimming override control
   2. Scene switches allow customized scenes to be programmable via Phone or Tablet based Application
   3. Available in Battery & AC Powered Versions

2.5 DIGITAL AUXILIARY INPUT/OUTPUT (I/O) INTERFACE MODULES

A. Utilized for automatic control via input from other sources such as key, timer or automatic transfer switches and/or Life Safety, A/V or BAS systems.

B. Includes 24VDC output and input terminals for momentary third party contact closure inputs.

C. Utilize input module for an Auto ON and Sweep OFF function input from other sources for the controlled area. During normal hours of operation, all local low-voltage devices are fully operational. During after hours, a timer shall be applied to all low-voltage switches or dimmers so that the room will automatically sweep off every two hours following switch activation. Provide a blink warning to alert occupants of impending OFF.

D. Specific I/O devices shall have a dimming control output that can control 0-10 VDC dimmable ballasts or LED drivers by sinking up to 16 mA of current.

E. Specific I/O devices shall have an input that reads a 0-10 VDC signal from 3rd party devices

F. Specific I/0 devices shall sense state of low voltage outdoor photocells

G. Network Time Keeper

1. Device manages up to 20 times schedules deployed throughout initiative. For larger initiatives, please consult factory for the quantity of NTK needed
2. In conjunction with Remote Access Bridge system must support astronomical time clock capabilities
3. Time Schedules must operate on a basis of ON/OFF, Normal Hours/After Hours to groups that implement pre-configured control scenarios. Scenarios shall include:
    a. Scheduled ON / OFF
    b. Manual ON / Scheduled OFF
    c. Astro ON / OFF (or Photo ON / OFF)
    d. Astro and Schedule ON / OFF (or Photo and Schedule ON / OFF)
4. Schedules and Events will Operate independent of the state of Cloud Connectivity

2.6 CONFIGURATION TOOLS

A. A configuration tool facilitates optional customization of In-Room or Networked Controls
1. Accessible from any Bluetooth enabled iOS and Android phone or tablet as well as project specific remote portal.
2. Enterprise level software suite supports local and remote project start-up efforts

B. Features and functionality of the Application shall include but not be limited to:
1. Customization of In-Room networks using iOS or Android phone or tablet.
2. Must be able to read and modify parameters for load controllers, I/O controllers, occupancy sensors, wall switches and photo cells. Identification of devices by type, MAC address or project specific naming conventions is required.
3. Adjust and fine tune occupancy and daylight sensor settings in an open or closed loop configuration.

C. Global Network

1. The Global Network does not require any additional hardware or cabling to expand the system from a local network to a site specific integration.

2.7 NETWORK INTERFACES

A. Provide one bridge for every 1,000 controlled devices to be connected
   1. The Global Network Bridge shall be provided as a separate module connected on the In-Room network.
   2. Remote Access Bridge shall make all room devices connected to the local network and all device parameters visible to Avi-on cloud.
   3. The remote access bridge shall operate totally independent of the client's network while linking to the Avi-on Cloud for centralized/remote programming, diagnostics, troubleshooting and (optional) BMS integration, Demand Curtailment Initiatives and Energy Analytics.
   4. If a remote access bridge temporarily loses communication with the Cloud there should be no disruption to local control schemes.

B. Global Management Controller:
   1. For networked applications, the system shall include at least one Remote Access Bridge to manage network communications between the BLE Mesh Network and the Cloud. The communications between the two networks will be protected 256 Bit encryption..
   2. Operational features of the Controller shall include the following:
   3. Log-in security capable of restricting users to those who have access to site specific log-ins and passwords.
   4. Ability to view and modify device parameters. It shall be possible to set device parameters independently for normal hours and after-hours operation including sensor mode, time delays and sensitivities, occupied and unoccupied levels, .fade rates and recall to last light level.
   5. Ability to set up schedules for initiative, view and override current status of fixtures or zones
   6. Ability to create zones, schedules shall be created and modified on a macro and micro levels and set for normal and after-hours operations. Support for a minimum of 20 unique schedules, Able to support, daily weekly, monthly, annual and holiday schedules.
   7. Ability to group areas and loads for common control by schedules, switches, or network commands.

C. Network Equipment
   1. Not Required

D. BAS Integration

   1. Provide capabilities for integration with a Building Automation System (BAS) via Open API
   2. At a minimum, the following shall be available: Point identification, Sensor state & triggers, Fixture or zone state or triggers, time schedules, groups , scenes and energy reporting .

E. Management Software

1. Every device parameter (e.g. sensor time delay and photocell setpoint) shall be available and configurable remotely from the software.
2. Software shall require all users to log in with a User Name and Password.
3. All sensitive stored information and privileged communication by the software shall be protected by 256 bit encryption.
4. Software shall be capable of managing systems independent of network architecture

2.8 CONDUCTORS AND CABLES

A. Power Wiring to Supply Side of Remote-Control Power Sources: Not smaller than No. 12 AWG. Comply with requirements in Section 260519 "Low-Voltage Electrical Power Conductors and Cables."

B. Classes 2 and 3 Control Cable: Multiconductor cable with stranded-copper conductors not smaller than No. 12 AWG. Comply with requirements in Section 260519 "Low-Voltage Electrical Power Conductors and Cables."

C. Class 1 Control Cable: Multiconductor cable with stranded-copper conductors not smaller than No. 12 AWG. Comply with requirements in Section 260519 "Low-Voltage Electrical Power Conductors and Cables."

PART 3 - EXECUTION

3.1 EXECUTION REQUIREMENTS

A. Refer to DDC General Conditions for execution requirements.

3.2 INSTALLATION

A. Install and aim sensors in locations to achieve not less than 90 percent coverage of areas indicated. Do not exceed coverage limits specified in manufacturer's written instructions.

B. Occupancy Adjustments: When requested within 12 months from date of Substantial Completion, provide on-site assistance in adjusting sensors to suit actual occupied conditions. Provide up to two visits to Project during other-than-normal occupancy hours for this purpose.
1. For occupancy and motion sensors, verify operation at outer limits of detector range. Set time delay to suit Commissioner's operations.

C. Wiring Method: Comply with Section 260519 "Low-Voltage Electrical Power Conductors and Cables." Minimum conduit size is 1/2 inch.

D. Identify components and power and control wiring according to Section 260553 "Identification for Electrical Systems."

E. All line-voltage connections shall be tagged to indicate circuit and switched legs.

F. Test all devices to ensure proper communication.

G. Calibrate all sensor time delays and sensitivity to guarantee proper detection of occupants and energy savings.

H. Adjust time delay so that controlled area remains lighted while occupied.

I. Provide written or computer-generated documentation on the configuration of the system including room-by-room description including:
   1. Sensor parameters, time delays, sensitivities, and daylighting setpoints.
   2. Sequence of operation, (e.g. manual ON, Auto OFF. etc.)
   3. Load Parameters (e.g. blink warning, etc.)

J. Tighten all panel Class I conductors at circuit breakers and at loads to torque ratings as marked on enclosure UL label.

K. Run separate neutrals for any phase dimmed branch load circuit. Different types of dimmed loads shall have separate neutrals.

L. Verify all loads to be free from short circuits prior to connection to room controllers.

M. Control cables for controlling HVAC and lighting equipment connected to emergency power shall be routed in raceways separate from each other.

3.3 SENSOR LAYOUTS

A. Confirm quantity and provide appropriate coverage by sensors on a per-space requirement. Symbols on drawings are diagrammatic and represent design intent only.

B. Occupancy sensors shall be installed at locations indicated on the manufacturer's submittal layout drawings. Sensors shall be located to prevent false triggering of the lights to ON when no occupant is present.

3.4 FIELD QUALITY CONTROL

A. Testing Agency: Engage a qualified testing agency to evaluate lighting control devices and perform tests and inspections.

B. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect components, assemblies, and equipment installations, including connections, and to assist in testing. Notify Manufacturer in writing a minimum of three (3) weeks prior to system start-up and testing.

C. Perform the following tests and inspections with the assistance of a factory-authorized service representative:
   1. Verify Class I and II wiring connections by validating system performance.
   2. Set IP addresses and other network settings of system front-end hardware per facility's IT. instructions.
   3. Verify/complete task programming for all switches, dimmers, time clocks, and sensors.
   4. Verify that the control of each space complies with the Lighting Sequence of Operation.
   5. Correct any system issues and retest.

D. Lighting control devices will be considered defective if they do not pass tests and inspections.

E. Prepare test and inspection reports.

3.5 POST START-UP TUNING

A. Adjust sensor time delays and sensitivities 30 days from initial occupancy. Provide a detailed report of post start-up activity.

3.6 WARRANTY

A. Manufacturer shall provide a 5-year limited warranty on products within this installation, except where otherwise noted, and consisting of a one-for-one device replacement.

3.7 PRODUCT SUPPORT AND SERVICE

A. Factory telephone support shall be available at no cost to the commisioner following acceptance. Factory assistance shall consist of assistance in solving application and performance issues pertaining to the control equipment.

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SECTION 26 27 26 - WIRING DEVICES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum and (5) the Contract (City of New York Standard Construction Contract).

1.2 SUMMARY

A. Section Includes:
   1. Receptacles, receptacles with integral GFCI, and associated device plates.
   2. Weather-resistant receptacles.
   3. Toggle switches, Dimmer switch

1.3 SUBMITTAL PROCEDURES

A. Refer to DDC General Conditions Section 01 33 00 “Submittal Procedures”.

1.4 ACTION SUBMITTALS

A. Refer to DDC General Conditions.

B. Product Data: For each type of product.

C. Shop Drawings: List of legends and description of materials and process used for premarking wall plates.

1.5 INFORMATIONAL SUBMITTALS

A. Field quality-control reports.

1.6 CLOSEOUT SUBMITTALS

A. Operation and maintenance data.

1.7 QUALITY ASSURANCE

A. Refer to DDC General Conditions Section 01 04 00 “Quality Requirements”.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers:
1. Cooper Wiring Devices; Division of Cooper Industries, Inc. (Cooper).
2. Hubbell Incorporated; Wiring Device-Kellems (Hubbell).
3. Leviton Mfg. Company Inc. (Leviton).
4. Avi-On.
5. Lutron.
6. LG.
7. Or approved equal.

B. Source Limitations: Obtain each type of wiring device and associated wall plate from single source from single manufacturer.

2.2 GENERAL WIRING-DEVICE REQUIREMENTS

A. Wiring Devices, Components, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

B. Devices that are manufactured for use with modular plug-in connectors may be substituted under the following conditions:
1. Connectors shall comply with UL 2459 and shall be made with stranding building wire.
2. Devices shall comply with the requirements in this Section.

2.3 STRAIGHT-BLADE RECEPTACLES

A. Convenience Receptacles, 125 V, 20 A: Comply with NEMA WD 1, NEMA WD 6 Configuration 5-20R, UL 498, and FS W-C-596.
1. Manufacturers:
a. Cooper; 5351 (single), CR5362 (duplex).
b. Hubbell; HBL5351 (single), HBL5352 (duplex).
c. Leviton; 5891 (single), 5352 (duplex).
d. Pass & Seymour; 5361 (single), 5362 (duplex).
e. Or approved equal.

2.4 GFCI RECEPTACLES

A. Non-feed-through-type GFCI unit shall be selected where no protection of downstream receptacles is required.

B. General Description:
1. Straight blade, feed through type.
2. Comply with NEMA WD 1, NEMA WD 6, UL 498, UL 943 Class A, and FS W-C-596.

3. Include indicator light that shows when the GFCI has malfunctioned and no longer provides proper GFCI protection.

C. Duplex GFCI Convenience Receptacles, 125 V, 20 A:
1. Manufacturers:
a. Cooper; VGF20.
b. Hubbell; GFR5352L.
c. Pass & Seymour; 2095.
d. Leviton; 7590.
e. Or approved equal.

2.5 TOGGLE/DIMMER SWITCHES

A. Comply with NEMA WD 1, UL 20, and FS W-S-896.

B. Switches, 120/277 V, 20 A:
1. Manufacturers:
a. LG; LGE-switch-4B-AC
b. Scheduling dimmer switch – use with smart multi sensor: Wall mounted four-button switch.
c. Avi-ON
d. Lutron Maestro model MRF2-8S-DV-WH
e. Or approved equal.

2.6 COVER PLATES

A. Single and combination types shall match corresponding wiring devices.
1. Plate-Securing Screws: Metal with head color to match plate finish.
2. Material for Damp Locations: Cast aluminum with spring-loaded lift cover, and listed and labeled for use in wet and damp locations.

B. Wet-Location, Weatherproof Cover Plates: NEMA 250, complying with Type 3R, weather-resistant, die-cast aluminum with lockable cover.

PART 3 - EXECUTION

3.1 EXECUTION REQUIREMENTS

A. Refer to DDC General Conditions for execution requirements.

3.2 INSTALLATION

A. Refer to DDC General Conditions.

B. Comply with NECA 1, including mounting heights listed in that standard, unless otherwise indicated.

C. Coordination with Other Trades:
   1. Protect installed devices and their boxes. Do not place wall finish materials over device boxes and do not cut holes for boxes with routers that are guided by riding against outside of boxes.

D. Conductors:
   1. Do not strip insulation from conductors until right before they are spliced or terminated on devices.
   2. Strip insulation evenly around the conductor using tools designed for the purpose. Avoid scoring or nicking of solid wire or cutting strands from stranded wire.
   3. The length of free conductors at outlets for devices shall meet provisions of NFPA 70, Article 300, without pigtails.
   4. Existing Conductors:
      a. Cut back and pigtail, or replace all damaged conductors.
      b. Straighten conductors that remain and remove corrosion and foreign matter.
      c. Pigtailing existing conductors is permitted, provided the outlet box is large enough.

E. Device Installation:
   1. Replace devices that have been in temporary use during construction and that were installed before building finishing operations were complete.
   2. Keep each wiring device in its package or otherwise protected until it is time to connect conductors.
   3. Do not remove surface protection, such as plastic film and smudge covers, until the last possible moment.
   4. Connect devices to branch circuits using pigtails that are not less than 6 inches (152 mm) in length.
   5. When there is a choice, use side wiring with binding-head screw terminals. Wrap solid conductor tightly clockwise, two-thirds to three-fourths of the way around terminal screw.
   6. Use a torque screwdriver when a torque is recommended or required by manufacturer.
   7. When conductors larger than No. 12 AWG are installed on 15- or 20-A circuits, splice No. 12 AWG pigtails for device connections.
   8. Tighten unused terminal screws on the device.
   9. When mounting into metal boxes, remove the fiber or plastic washers used to hold device-mounting screws in yokes, allowing metal-to-metal contact.

F. Device Plates: Do not use oversized or extra-deep plates. Repair wall finishes and remount outlet boxes when standard device plates do not fit flush or do not cover rough wall opening.

G. Arrangement of Devices: Unless otherwise indicated, mount flush, with long dimension vertical and with grounding terminal of receptacles on top. Group adjacent switches under single, multigang wall plates.

H. Adjust locations of service poles to suit arrangement of partitions and furnishings.

3.3 GFCI RECEPTACLES

A. Install non-feed-through-type GFCI receptacles where protection of downstream receptacles is not required.

3.4 FIELD QUALITY CONTROL

A. Perform the following tests and inspections:

1. Test Instruments: Use instruments that comply with UL 1436.
2. Test Instrument for Convenience Receptacles: Digital wiring analyzer with digital readout or illuminated digital-display indicators of measurement.

B. Tests for Convenience Receptacles:
1. Line Voltage: Acceptable range is 110 to 128 V.
2. Percent Voltage Drop under 20-A Load: A value of 3 percent or higher is unacceptable.
3. Ground Impedance: Values of up to 2 ohms are acceptable.
4. GFCI Trip: Test for tripping values specified in UL 1436 and UL 943.
5. Using the test plug, verify that the device and its outlet box are securely mounted.
6. Tests shall be diagnostic, indicating damaged conductors, high resistance at the circuit breaker, poor connections, inadequate fault current path, defective devices, or similar problems. Correct circuit conditions, remove malfunctioning units and replace with new ones, and retest as specified above.

C. Wiring device will be considered defective if it does not pass tests and inspections.

D. Prepare test and inspection reports.

END OF SECTION 26 27 26

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SECTION 26 28 13 - FUSES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum and (5) the Contract (City of New York Standard Construction Contract).

1.2 SUMMARY

A. Section Includes: Cartridge fuses rated 600-V ac and less for use in enclosed switches, switchboards.

1.3 SUBMITTAL PROCEDURES

A. Refer to DDC General Conditions Section 01 33 00 “Submittal Procedures”.

1.4 ACTION SUBMITTALS

A. Refer to DDC General Conditions.

B. Product Data: For each type of product indicated.

1.5 CLOSEOUT SUBMITTALS

A. Operation and maintenance data.

1.6 QUALITY ASSURANCE

A. Refer to DDC General Conditions Section 01 40 00 “Quality Requirements”.

B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

C. Comply with NEMA FU 1 for cartridge fuses.

D. Comply with NFPA 70.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers:
1. Cooper Bussmann, Inc.
2. Edison Fuse, Inc.
3. Ferraz Shawmut, Inc.
4. Littelfuse, Inc.
5. Or approved equal.

2.2 CARTRIDGE FUSES

A. Characteristics: NEMA FU 1, nonrenewable cartridge fuses with voltage ratings consistent with circuit voltages.

PART 3 - EXECUTION

3.1 EXECUTION REQUIREMENTS

A. Refer to DDC General Conditions for execution requirements.

3.2 FUSE APPLICATIONS

A. Service Entrance: Class L, current limiting.

B. Switchboard: Class L, current limiting.

C. Feeders: Class L, time delay.

D. Motor Branch Circuits: Class RK5, time delay.

E. Control Circuits: Class CC, time delay.

3.3 INSTALLATION

A. Install fuses in fusible devices. Arrange fuses so rating information is readable without removing fuse.

3.4 IDENTIFICATION

A. Install labels complying with requirements for identification specified in Section 26 05 53 "Identification for Electrical Systems" and indicating fuse replacement information on inside door of each fused switch and adjacent to each fuse block and holder.

END OF SECTION 26 28 13

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SECTION 26 28 16 - ENCLOSED SWITCHES AND CIRCUIT BREAKERS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum and (5) the Contract (City of New York Standard Construction Contract).

1.2 SUMMARY

A. Section Includes:
   1. Fusible switches.
   2. Molded-case circuit breakers (MCCBs).
   3. Enclosures.

1.3 DEFINITIONS

A. NC: Normally closed.

B. NO: Normally open.

C. SPDT: Single pole, double throw.

1.4 PERFORMANCE REQUIREMENTS

A. Seismic Performance: Enclosed circuit breakers shall withstand the effects of earthquake motions determined according to ASCE/SEI 7.
   1. The term "withstand" means "the unit will remain in place without separation of any parts from the device when subjected to the seismic forces specified and the unit will be fully operational after the seismic event."

1.5 SUBMITTAL PROCEDURES

A. Refer to DDC General Conditions Section 01 33 00 “Submittal Procedures”.

1.6 ACTION SUBMITTALS

A. Product Data: For each type of enclosed circuit breaker, accessory, and component indicated.

B. Shop Drawings: For enclosed circuit breakers. Include plans, elevations, sections, details, and attachments to other work.
   1. Wiring Diagrams: For power, and control wiring.

1.7 INFORMATIONAL SUBMITTALS

A. Seismic Qualification Certificates: For enclosed circuit breakers, accessories, and components, from manufacturer.

B. Field quality-control reports.

1.8 CLOSEOUT SUBMITTALS

A. Operation and maintenance data.

1.9 QUALITY ASSURANCE

A. Refer to DDC General Conditions Section 01 40 00 “Quality Requirements”.

B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

C. Comply with NFPA 70.

PART 2 - PRODUCTS

2.1 FUSIBLE SWITCHES

A. Manufacturers:
   1. Eaton Electrical Inc.; Cutler-Hammer Business Unit.
   2. General Electric Company; GE Consumer & Industrial - Electrical Distribution.
   3. Siemens Energy & Automation, Inc.
   4. Square D; a brand of Schneider Electric.
   5. Or approved equal.

B. Type HD, Heavy Duty, Single Throw, 600-V ac: UL 98 and NEMA KS 1, horsepower rated, with clips or bolt pads to accommodate indicated fuses, lockable handle with capability to accept three padlocks, and interlocked with cover in closed position.

C. Accessories:
   1. Equipment Ground Kit: Internally mounted and labeled for copper and aluminum ground conductors.
   2. Neutral Kit: Internally mounted; insulated, capable of being grounded and bonded; labeled for copper and aluminum neutral conductors.
   3. Class R Fuse Kit: Provides rejection of other fuse types when Class R fuses are specified.

4. Lugs: Suitable for number, size, and conductor material.
5. Service-Rated Switches: Labeled for use as service equipment.

2.2 NONFUSIBLE SWITCHES

A. Manufacturers:
1. Eaton Electrical Inc.; Cutler-Hammer Business Unit.
2. General Electric Company; GE Consumer & Industrial - Electrical Distribution.
3. Siemens Energy & Automation, Inc.
4. Square D; a brand of Schneider Electric.
5. Or approved equal.

B. Type HD, Heavy Duty, Single Throw, 600-V ac: UL 98 and NEMA KS 1, horsepower rated, lockable handle with capability to accept three padlocks, and interlocked with cover in closed position.

C. Accessories:
1. Equipment Ground Kit: Internally mounted and labeled for copper and aluminum ground conductors.
2. Neutral Kit: Internally mounted; insulated, capable of being grounded and bonded; labeled for copper and aluminum neutral conductors.
3. Lugs: Suitable for number, size, and conductor material.

2.3 MOLDED-CASE CIRCUIT BREAKERS

A. Manufacturers:
1. Eaton Electrical Inc.; Cutler-Hammer Business Unit.
2. General Electric Company; GE Consumer & Industrial - Electrical Distribution.
3. Siemens Energy & Automation, Inc.
4. Square D; a brand of Schneider Electric.
5. Or approved equal.

B. General Requirements: Comply with UL 489, NEMA AB 1, and NEMA AB 3, with interrupting capacity to comply with available fault currents.

C. Thermal-Magnetic Circuit Breakers: Inverse time-current element for low-level overloads and instantaneous magnetic trip element for short circuits. Adjustable magnetic trip setting for circuit-breaker frame sizes 250 A and larger.

D. Electronic Trip Circuit Breakers: Field-replaceable rating plug, rms sensing, with the following field-adjustable settings:
1. Instantaneous trip.
2. Long- and short-time pickup levels.
3. Long- and short-time time adjustments.
4. Ground-fault pickup level, time delay, and I^2t response.

E. Current-Limiting Circuit Breakers: Frame sizes 400 A and smaller, and let-through ratings less than NEMA FU 1, RK-5.

F. Features and Accessories:
   1. Standard frame sizes, trip ratings, and number of poles.
   2. Lugs: Suitable for number, size, trip ratings, and conductor material.
   3. Application Listing: Appropriate for application; Type SWD for switching fluorescent lighting loads; Type HID for feeding fluorescent and high-intensity discharge lighting circuits.
   4. Ground-Fault Protection: Comply with UL 1053; integrally mounted, self-powered type with mechanical ground-fault indicator; relay with adjustable pickup and time-delay settings, push-to-test feature, internal memory, and shunt trip unit; and three-phase, zero-sequence current transformer/sensor.

2.4 ENCLOSURES

A. Enclosed Circuit Breakers: NEMA AB 1, NEMA KS 1, NEMA 250, and UL 50, to comply with environmental conditions at installed location.
   1. Indoor, Dry and Clean Locations: NEMA 250, Type 1
   2. Indoor Locations Subject to Dust, Falling Dirt, and Dripping Noncorrosive Liquids: NEMA 250, Type 12.
   3. Other Wet or Damp, Indoor Locations: NEMA 250, Type 4.

PART 3 - EXECUTION

3.1 EXECUTION REQUIREMENTS

A. Refer to DDC General Conditions for execution requirements.

3.2 INSTALLATION

A. Install individual wall-mounted circuit breakers with tops at uniform height unless otherwise indicated.

B. Comply with mounting and anchoring requirements.

C. Temporary Lifting Provisions: Remove temporary lifting eyes, channels, and brackets and temporary blocking of moving parts from enclosures and components.

D. Comply with NECA 1.

3.3 IDENTIFICATION

A. Comply with requirements in Section 26 05 53 "Identification for Electrical Systems."
   1. Identify field-installed conductors, interconnecting wiring, and components; provide warning signs.
   2. Label each enclosure with engraved metal or laminated-plastic nameplate.

3.4 FIELD QUALITY CONTROL

A. Perform tests and inspections.

B. Acceptance Testing Preparation:
   1. Test insulation resistance for each enclosed circuit breaker, component, connecting supply, feeder, and control circuit.
   2. Test continuity of each circuit.

C. Tests and Inspections:
   1. Perform each visual and mechanical inspection and electrical test stated in NETA Acceptance Testing Specification. Certify compliance with test parameters.
   2. Correct malfunctioning units on-site, where possible, and retest to demonstrate compliance; otherwise, replace with new units and retest.

D. Enclosed circuit breakers will be considered defective if they do not pass tests and inspections.

E. Prepare test and inspection reports, including a certified report that identifies enclosed circuit breakers and that describes scanning results. Include notation of deficiencies detected, remedial action taken, and observations after remedial action.

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SECTION 26 29 23-VARIABLE-FREQUENCY DRIVE MOTOR CONTROLLERS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum and (5) the Contract (City of New York Standard Construction Contract).

1.2 SUMMARY

A. Section includes separately enclosed, preassembled, combination VFDs, rated 600 V and less, for speed control of three-phase, squirrel-cage induction motors.

1.3 SUBMITTAL PROCEDURES

A. Refer to DDC General Conditions Section 01 33 00 “Submittal Procedures”.

1.4 ACTION SUBMITTALS

A. Refer to DDC General Conditions

B. Product Data: For each type and rating of VFD indicated.

C. Shop Drawings: For each VFD indicated.
   1. Include details of equipment assemblies. Indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
   2. Include diagrams for power, signal, and control wiring.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For testing agency.

B. Product certificates.

C. Field quality-control reports.

1.6 CLOSEOUT SUBMITTALS

A. Refer to DDC General Conditions

B. Operation and maintenance data.

1.7 QUALITY ASSURANCE

A. Refer to DDC General Conditions Section 01 40 00 “Quality Requirements”.

B. Testing Agency Qualifications: Member company of NETA or an NRTL.

1.8 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace VFDs that fail in materials or workmanship within specified warranty period.
   1. Warranty Period: 5 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers:
   1. Danfoss Inc; Danfoss Drives Div.
   2. Eaton Electrical Sector; Eaton Corporation; Cutler-Hammer Business Unit.
   3. Rockwell Automation, Inc; Allen-Bradley Brand.
   4. Schneider Electric USA, Inc.
   5. Siemens Energy & Automation, Inc.
   6. Yaskawa Electric America, Inc.
   7. Or approved equal.

2.2 SYSTEM DESCRIPTION

A. General Requirements for VFDs:
   1. VFDs and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
   2. Comply with NEMA ICS 7, NEMA ICS 61800-2, and UL 508A

B. VFD Description: Variable-frequency motor controller, consisting of power converter that employs pulse-width-modulated inverter, factory built and tested in an enclosure, with integral disconnecting means and overcurrent and overload protection; listed and labeled by an NRTL as a complete unit; arranged to provide self-protection, protection, and variable-speed control of one or more three-phase induction motors by adjusting output voltage and frequency.
   1. Units suitable for operation of NEMA MG 1 motors.
   2. Listed and labeled for integrated short-circuit current (withstand) rating by an NRTL acceptable to the Commissioner.

C. Output Rating: Three phase; 10 to 60 Hz, with voltage proportional to frequency throughout voltage range; maximum voltage equals input voltage.

D. Unit Operating Requirements:
1. Input AC Voltage Tolerance: Plus 10 and minus 10 percent of VFD input voltage rating.
2. Input AC Voltage Unbalance: Not exceeding 3 percent.
3. Input Frequency Tolerance: Plus or minus 3 percent of VFD frequency rating.
4. Minimum Efficiency: 97 percent at 60 Hz, full load.
5. Minimum Displacement Primary-Side Power Factor: 96 percent under any load or speed condition.
6. Minimum Short-Circuit Current (Withstand) Rating: 22kA.
7. Ambient Temperature Rating: Not less than 32 deg Fand not exceeding 104 deg F
8. Humidity Rating: Less than 95 percent (noncondensing).
9. Altitude Rating: Not exceeding 3300 feet
10. Vibration Withstand: Comply with NEMA ICS 61800-2.
11. Overload Capability: 1.5 times the base load current for 60 seconds; minimum of 1.8 times the base load current for three seconds.
12. Starting Torque: Minimum 100 percent of rated torque from 3 to 60 Hz.
13. Speed Regulation: Plus or minus 10 percent.
14. Output Carrier Frequency: Selectable; 0.5 to 15 kHz.
15. Stop Modes: Programmable; includes fast, free-wheel, and dc injection braking.

E. Inverter Logic: Microprocessor based, 32 bit, isolated from all power circuits.

F. Isolated Control Interface: Allows VFDs to follow remote-control signal over a minimum 40:1 speed range.
1. Signal: Electrical.

G. Internal Adjustability Capabilities:
1. Minimum Speed: 5 to 25 percent of maximum rpm.
2. Maximum Speed: 80 to 100 percent of maximum rpm.
3. Current Limit: 30 to minimum of 150 percent of maximum rating.

H. Self-Protection and Reliability Features:
1. Surge Suppression: Factory installed as an integral part of the VFD, complying with UL 1449 SPD, Type 1 or Type 2.
2. Surge Suppression: Field-mounted surge suppressors complying with UL 1449 SPD, Type 2.
3. Loss of Input Signal Protection: Selectable response strategy, including speed default to a percent of the most recent speed, a preset speed, or stop; with alarm.
4. Under- and overvoltage trips.
5. Inverter overcurrent trips.
6. VFD and Motor-Overload/Overtemperature Protection: Microprocessor-based thermal protection system for monitoring VFDs and motor thermal characteristics, and for providing VFD overtemperature and motor-overload alarm and trip; settings selectable via the keypad.
7. Instantaneous line-to-line and line-to-ground overcurrent trips.
8. Loss-of-phase protection.
9. Reverse-phase protection.
10. Short-circuit protection.
11. Motor-overtemperature fault.

I. Automatic Reset/Restart: Attempt three restarts after drive fault or on return of power after an interruption and before shutting down for manual reset or fault correction; adjustable delay time between restart attempts.

J. Power-Interruption Protection: To prevent motor from re-energizing after a power interruption until motor has stopped, unless "Bidirectional Autospeed Search" feature is available and engaged.

K. Bidirectional Autospeed Search: Capable of starting VFD into rotating loads spinning in either direction and returning motor to set speed in proper direction, without causing damage to drive, motor, or load.

L. Torque Boost: Automatically varies starting and continuous torque to at least 1.5 times the minimum torque to ensure high-starting torque and increased torque at slow speeds.

M. Motor Temperature Compensation at Slow Speeds: Adjustable current fall-back based on output frequency for temperature protection of self-cooled, fan-ventilated motors at slow speeds.

N. Integral Input Disconnecting Means and OCPD: NEMA KS 1, nonfusible switch with pad-lockable, door-mounted handle mechanism.
1. Disconnect Rating: Not less than 115 percent of VFD input current rating.
2. Disconnect Rating: Not less than 115 percent of NFPA 70 motor full-load current rating or VFD input current rating, whichever is larger.
3. Auxiliary Contacts: NO or NC, arranged to activate before switch blades open.
4. Auxiliary contacts "a" and "b" arranged to activate with circuit-breaker handle.

2.3 CONTROLS AND INDICATION

A. Status Lights: Door-mounted LED indicators displaying the following conditions:
1. Power on.
2. Run.
3. Overvoltage.
4. Line fault.
5. Overcurrent.
6. External fault.

B. Panel-Mounted Operator Station: Manufacturer's standard front-accessible, sealed keypad and plain-English-language digital display; allows complete programming, program copying, operating, monitoring, and diagnostic capability.
1. Keypad: In addition to required programming and control keys, include keys for HAND, OFF, and AUTO modes.
2. Security Access: Provide electronic security access to controls through identification and password with at least one level of access: View only; view and operate; and view, operate, and service.
a. Control Authority: Supports at least four conditions: Off, local manual control at VFD, local automatic control at VFD, and automatic control through a remote source.

C. Historical Logging Information and Displays:
1. Real-time clock with current time and date.
2. Running log of total power versus time.
3. Total run time.

D. Indicating Devices: Digital display mounted flush in VFD door and connected to display VFD parameters including, but not limited to:
   1. Output frequency (Hz).
   2. Motor speed (rpm).
   3. Motor status (running, stop, fault).
   4. Motor current (amperes).
   5. Motor torque (percent).
   6. Fault or alarming status (code).
   7. PID feedback signal (percent).
   8. DC-link voltage (V dc).
   9. Set point frequency (Hz).
   10. Motor output voltage (V ac).

E. Control Signal Interfaces:
   1. Remote Signal Inputs: Capability to accept any of the following speed-setting input signals from the BAS or other control systems:
      a. 0- to 10-V dc.
      b. 4- to 20-mA dc.
      c. Potentiometer using up/down digital inputs.
      d. Fixed frequencies using digital inputs.

F. PID Control Interface: Provides closed-loop set point, differential feedback control in response to dual feedback signals. Allows for closed-loop control of fans and pumps for pressure, flow, or temperature regulation.
   1. Number of Loops: 2

2.4 BYPASS SYSTEMS

A. Bypass Operation: Manually transfers motor between power converter output and bypass circuit. Unit is capable of stable operation (starting, stopping, and running) with motor completely disconnected from power converter.

B. Bypass Mode: Manual operation only; requires local operator selection at VFD. Transfer between power converter and bypass contactor, and retransfer shall only be allowed with the motor at zero speed.

C. Bypass Controller: Two-contactor-style bypass allows motor operation via the power converter or the bypass controller with input isolating switch and barrier arranged to isolate the power converter and permit safe troubleshooting and testing, both energized and de-energized, while motor is operating in bypass mode.
   1. Bypass Contactor: Load-break, NEMA-rated contactor.
   2. Output Isolating Contactor: Non-load-break, NEMA-rated contactor.
   3. Isolating Switch: Non-load-break switch arranged to isolate power converter and permit safe troubleshooting and testing of the power converter, both energized and de-energized, while motor is operating in bypass mode; pad-lockable, door-mounted handle mechanism.

D. Bypass Contactor Configuration: Full-voltage across-the-line type.
   1. NORMAL/BYPASS selector switch.
   2. HAND/OFF/AUTO selector switch.

3. NORMAL/TEST Selector Switch: Allows testing and adjusting of VFD while the motor is running in the bypass mode.
4. Contactor Coils: Pressure-encapsulated type
   a. Operating Voltage: Depending on contactor NEMA size and line-voltage rating, manufacturer's standard matching control power or line voltage.
   b. Power Contacts: Totally enclosed, double break, and silver-cadmium oxide; assembled to allow inspection and replacement without disturbing line or load wiring.
5. Control Circuits: 24-V ac; obtained from integral CPT, with primary and secondary fuses 120V, with control power source of sufficient capacity to operate all integral devices and remotely located pilot, indicating, and control devices.
   a. CPT Spare Capacity: 100 VA.
6. Overload Relays: NEMA ICS 2.

2.5 OPTIONAL FEATURES

A. Damper control circuit with end-of-travel feedback capability.

B. Communication Port: RS-232 port, USB 2.0 port, or equivalent connection capable of connecting a printer.

2.6 ENCLOSURES

A. VFD Enclosures: NEMA 250, to comply with environmental conditions at installed location.
   1. Dry and Clean Indoor Locations: TYPE 1
   2. Outdoor Locations: TYPE 3R
   3. Indoor Locations Subject to Dust, Falling Dirt, and Dripping Noncorrosive Liquids: Type 12.

B. Plenum Rating: UL 1995; NRTL certification label on enclosure, clearly identifying VFD as "Plenum Rated."

2.7 ACCESSORIES

A. General Requirements for Control-Circuit and Pilot Devices: NEMA ICS 5; factory installed in VFD enclosure cover unless otherwise indicated.
   1. Push Buttons: Covered
   2. Pilot Lights: Push to test.
   3. Selector Switches: Rotary type.

B. Control Relays: Auxiliary and adjustable solid-state time-delay relays.

C. Phase-Failure, Phase-Reversal, and Undervoltage and Overvoltage Relays: Solid-state sensing circuit with isolated output contacts for hard-wired connections. Provide adjustable undervoltage, overvoltage, and time-delay settings.
   1. Current Transformers: Continuous current rating, basic impulse insulating level (BIL) rating, burden, and accuracy class suitable for connected circuitry. Comply with IEEE C57.13.

D. Supplemental Digital Meters:
   1. Elapsed-time meter.

2. Kilowatt meter.
3. Kilowatt-hour meter.

PART 3 - EXECUTION

3.1 EXECUTION REQUIREMENTS

A. Refer to DDC General Conditions for execution requirements.

3.2 INSTALLATION

A. Wall-Mounting Controllers: Install with tops at uniform height and with disconnect operating handles not higher than 79 inches (2000 mm) above finished floor, unless otherwise indicated, and by bolting units to wall or mounting on lightweight structural-steel channels bolted to wall. For controllers not on walls, provide freestanding racks complying with Section 260529 "Hangers and Supports for Electrical Systems."

B. Roof-Mounting Controllers: Install VFD on roofs with tops at uniform height and with disconnect operating handles not higher than 79 inches (2000 mm) above finished roof surface unless otherwise indicated, and by bolting units to curbs or mounting on freestanding, lightweight, structural-steel channels bolted to curbs. Seal roof penetrations after raceways are installed.

C. Temporary Lifting Provisions: Remove temporary lifting eyes, channels, and brackets and temporary blocking of moving parts from enclosures and components.

D. Install fuses in each fusible-switch VFD.

E. Install fuses in control circuits if not factory installed. Comply with requirements in Section 262816 “Enclosed Switches and Circuit Breakers.”

F. Install heaters in thermal-overload relays. Select heaters based on actual nameplate full-load amperes after motors are installed.

G. Install, connect, and fuse thermal-protector monitoring relays furnished with motor-driven equipment.

H. Comply with NECA 1.

3.3 CONTROL WIRING INSTALLATION

A. Install wiring between VFDs and remote devices. Comply with requirements in Section 260519 “Low Voltage Electrical Power Conductors.”

B. Bundle, train, and support wiring in enclosures.

3.4 IDENTIFICATION

A. Identify VFDs, components, and control wiring. Comply with requirements for identification specified in Section 260553 "Identification for Electrical Systems."
   1. Identify field-installed conductors, interconnecting wiring, and components; provide warning signs.
   2. Label each VFD with engraved nameplate.
   3. Label each enclosure-mounted control and pilot device.

3.5 FIELD QUALITY CONTROL

A. Perform tests and inspections with the assistance of a factory-authorized service representative.

B. Acceptance Testing Preparation:
   1. Test insulation resistance for each VFD element, bus, component, connecting supply, feeder, and control circuit.
   2. Test continuity of each circuit.

C. Tests and Inspections:
   1. Inspect VFD, wiring, components, connections, and equipment installation.
   2. Test insulation resistance for each VFD element, component, connecting motor supply, feeder, and control circuits.
   3. Test continuity of each circuit.
   4. Verify that voltages at VFD locations are within 10 percent of motor nameplate rated voltages.
   5. Test each motor for proper phase rotation.
   6. Perform tests according to the Inspection and Test Procedures for Adjustable Speed Drives stated in NETA Acceptance Testing Specification. Certify compliance with test parameters.
   7. Correct malfunctioning units on-site, where possible, and retest to demonstrate compliance; otherwise, replace with new units and retest.
   8. Test and adjust controls, remote monitoring, and safeties. Replace damaged and malfunctioning controls and equipment.

D. VFDs will be considered defective if they do not pass tests and inspections.

E. Prepare test and inspection reports, including a certified report that identifies the VFD and describes scanning results. Include notation of deficiencies detected, remedial action taken, and observations made after remedial action.

3.6 ADJUSTING

A. Program microprocessors for required operational sequences, status indications, alarms, event recording, and display features. Clear events memory after final acceptance testing and prior to Substantial Completion.

B. Set field-adjustable switches, auxiliary relays, time-delay relays, timers, and overload-relay pickup and trip ranges.

C. Adjust the trip settings of instantaneous-only circuit breakers and thermal-magnetic circuit breakers with adjustable, instantaneous trip elements. Initially adjust to 6 times the motor nameplate full-load amperes and

attempt to start motors several times, allowing for motor cool-down between starts. If tripping occurs on motor inrush, adjust settings in increments until motors start without tripping. Do not exceed 8 times the motor full-load amperes (or 11 times for NEMA Premium Efficient motors if required).

D. Set the taps on reduced-voltage autotransformer controllers.

E. Set field-adjustable pressure switches.

3.7 DEMONSTRATION

A. Instruct the City of New York's maintenance personnel to adjust, operate, reprogram, and maintain VFDs.

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SECTION 26 51 00 - INTERIOR LIGHTING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The following documents apply to all required work for the Project: (1) the Contract Drawings, (2) the Specifications, (3) the General Conditions, (4) the Addendum and (5) the Contract (City of New York Standard Construction Contract).

1.2 SUMMARY

A. Section Includes:
   1. Interior lighting fixtures, lamps, and ballasts.
   2. Exit signs.
   3. Lighting fixture supports.

B. Related Sections:
   1. Section 26 27 26 "WIRING DEVICES".

1.3 SUBMITTAL PROCEDURES

A. Refer to DDC General Conditions Section 01 33 00 “Submittal Procedures”.

B. Product Data: For each type of lighting fixture, arranged in order of fixture designation. Include data on features, accessories, and finishes.

C. Shop Drawings: Show details of nonstandard or custom lighting fixtures. Indicate dimensions, weights, methods of field assembly, components, features, and accessories.

1.4 INFORMATIONAL SUBMITTALS

A. Field quality-control reports.

1.5 QUALITY ASSURANCE

A. Refer to DDC General Conditions Section 01 40 00 “Quality Requirements”.

B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

C. Comply with NFPA 70.

1.6 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace lighting fixtures or components, that fail in materials or workmanship within specified warranty period.
   1. Warranty Period: 5 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers:
   1. HE Williams.
   2. Leviton Lighting (and sub brands).
   3. Day-o-lite.
   4. Or approved equal.

2.2 GENERAL REQUIREMENTS FOR LIGHTING FIXTURES AND COMPONENTS

A. Metal Parts: Free of burrs and sharp corners and edges.

B. Sheet Metal Components: Steel unless otherwise indicated. Form and support to prevent warping and sagging.

C. Doors, Frames, and Other Internal Access: Smooth operating, free of light leakage under operating conditions, and designed to permit relamping without use of tools. Designed to prevent doors, frames, lenses, diffusers, and other components from falling accidentally during relamping and when secured in operating position.

D. Diffusers and Globes:
   1. Acrylic Lighting Diffusers: 100 percent virgin acrylic plastic. High resistance to yellowing and other changes due to aging, exposure to heat, and UV radiation.
      a. Lens Thickness: At least 0.125 inch minimum unless otherwise indicated.
      b. UV stabilized.

2.3 LUMINAIRES TYPE – LINEAR PENDANT

A. Each luminaire shall consist of an assembly that utilizes LEDs as the light source. In addition, a complete luminaire shall consist of a housing, LED array, and electronic driver (power supply) and integral controls as per this specification.
      a. Each luminaire shall be designed to operate at an average operating temperature of 25°C.

B. The operating temperature range shall be 0°C to +25°C.

C. Each luminaire shall meet all parameters of this specification throughout the minimum operational life of 50,000 hours when operated at the average operating temperature.

D. Luminaire Construction
   1. Luminaire housing to have no visible welding, screws, springs, hooks, rivets, bare LEDs, or plastic supports.
   2. The luminaire shall be a single, self-contained device, not requiring onsite assembly for installation. The power supply and circuit board for the luminaire shall be integral to the unit.
   3. Luminaires shall be fabricated from post-painted cold-rolled 22 GA steel and shall be a rigid structure with die cast end caps. All joints shall be welded with no visible marks. Luminaire may be mounted and wired in continuous rows.
   4. Finish: Polyester powder coat painted in white, black or painted aluminum as per fixture schedule.
   5. Luminaire lengths in single sections of 4' or 8' shall have exact suspension spacing of 4' or 8'. Overall length – add 5/8" for flat end cap and 4" for sculpted end cap.
   6. Luminaire lengths of 4' or 8' shall be joined to create a continuous run using internal joiners
   7. Optics – Engineered optical systems of high performance lens, diffusers and metal reflectors.
   8. Lens shall be single clear diffuser with advanced optical film and shall provide LED concealment and even illumination across the diffuser.
   9. Polymeric materials (if used) of enclosures containing either the power supply or electronic components of the luminaire shall be made of UL94VO flame retardant materials. Luminaire lenses are excluded from this requirement.
   10. Suspension shall be aircraft wire with total suspension length as specified. Cable to be field adjustable.
   11. The assembly and manufacturing process for the SSL luminaire shall be designed to assure all internal components are adequately supported to withstand mechanical shock and vibration and prevent light leaks at all visible joints.

E. LED Sources
   1. Manufacturers:
      a. Nichia
      b. Cree
      c. Day-o-lite
      d. Or approved equal.
   2. Lumen Output – minimum initial delivered lumen output of the luminaire shall be as follows for the lumens exiting the luminaire in the 0-360-degree zone - as measured by IESNA Standard LM-79-08 in an accredited lab. Exact tested lumen output shall be clearly noted on the shop drawings.
      a. Lumen output shall not decrease by more than 20% over the minimum operational life of 50,000 hours at the rated ambient operating temperature.
      b. Individual LEDs shall be connected such that a catastrophic loss or the failure of one LED will not result in the loss of the all LEDs within the luminaire.
      c. LED Boards shall be suitable for field maintenance and have plug-in connectors. LED boards shall be upgradable.
      d. Light Color/Quality
         1) Correlated Color Temperature (CCT) range as per specification, between 3000K, 3500K and 4000K shall be correlated to chromaticity as defined by the absolute (X, Y) coordinates on the 2-D CIE chromaticity chart.
         2) Color shift over 6,000 hours shall be <0.007 change in u' v' as demonstrated in IES LM80 report.
         3) The Color Rendition Index (CRI) shall be 80 or greater.
         4) LED boards to be tested for color consistency and shall be within a space of 2.5 MacAdam ellipses on the CIE chromaticity chart.
   3. Power Supply and Drive

a. Driver manufacturers (Drivers to be compatible with the fixtures):
   1) eldoLED.
   2) Nichia.
   3) Cree.
   4) Or approved equal.
b. Ten-year expected life while operating at maximum case temperature and 90 percent non-condensing relative humidity.
c. Driver shall be UL Recognized under the component program and shall be modular for simple field replacement. Drivers that do not meet these requirements will not be accepted.
d. Electrical characteristics: 120 – 277 volt, UL Listed, CSA Certified, Sound Rated A+. Driver shall be > 80% efficient at full load across all input voltages. Input wires shall be 18AWG solid copper minimum.
e. Dimming: Driver shall be suitable for full-range dimming. LED dimming shall be equal in range and quality to a commercial grade incandescent dimmer. Quality of dimming to be defined by dimming range, freedom from perceived flicker or visible stroboscopic flicker, smooth and continuous change in level (no visible steps in transitions), natural square law response to control input, inaudible in 26db environment, and stable when input voltage conditions fluctuate over what is typically experienced in a commercial environment. Demonstration of this compliance to dimming performance will be necessary for substitutions or prior approval. The luminaire shall be capable of continuous dimming without perceivable flicker over a range of 100 percent to 0.1 percent of rated lumen output with a smooth shut off function.
   1) Dimming shall be controlled by a 0-10V signal.
   2) Driver shall include ability to provide no light output when the analog control signal drops below 0.5V, or the DALI/DMX digital signal calls for light to be extinguished and shall consume 0.5 watts or less in this standby. Control dead band between .5 and .65V shall be included to allow for voltage variation of incoming signal without causing noticeable variation in fixture to fixture output.
   3) Driver shall be capable of configuring a linear or logarithmic dimming curve, allowing fine-grained resolution at low light levels.
   4) Driver must be capable of 20-bit dimming resolution for white light LED driver.
f. Drivers shall track evenly across multiple fixtures at all light levels, and shall have an input signal to output light level that allows smooth adjustment over the entire dimming range.
g. Flicker: Driver and luminaire electronics shall deliver illumination that is free from objectionable flicker as measured by flicker index (ANSI/IES RP-16-10). At all points within the dimming range from 100-0.1 percent luminaire shall have:
   1) Less than 1 percent flicker index at frequencies below 120 Hz.
   2) Less than 12 percent flicker index at 120 Hz, and shall not increase at greater than 0.1 percent per Hz to a maximum of 80 percent flicker index at 800Hz.
h. Driver disconnect shall be provided.
i. The electronics/power supply enclosure shall be internal to the SSL luminaire and be accessible per UL requirements.
j. The surge protection that resides within the driver shall protect the luminaire from damage and failure for transient voltages and currents as defined in ANSI/IEEE C64.41 2002 for Location Category A, where failure does not mean a momentary loss of light during the transient event.

4. Electrical
a. Power Consumption: Maximum power consumption, ±5% when operating between 120 – 277V (or 346V) shall be as follows:

1) 4' Fixtures – 8¼" x 4' – 30 watts and 45 watts nominal (as indicated in the lighting fixture schedule)
2) 8' fixtures - 8¼" x 8' – 60 watts and 90 watts nominal (as indicated in the lighting fixture schedule)

b. Operation Voltage - The luminaire shall operate from a 60 HZ ±3 HZ AC line over a voltage ranging from 120 VAC to 277 VAC. The fluctuations of line voltage of (±10%) shall have no visible effect on the luminous output.
1) Adjustment of forward LED voltage, supporting 3V through 60V.
2) Adjustment of LED current from 200mA to 1.05A at the 100 percent control input point in increments of 1mA.
3) Adjustment for operating hours to maintain constant lumens (within 5 percent) over the 50,000-hour design life of the system, and deliver up to 20 percent energy savings early in the life cycle.

c. Electrical connections between normal power and driver must be modular utilizing a snap fit connector. All electrical components must be easily accessible after installation and be replaceable without lowering the luminaire.

d. All electrical components shall be RoHS compliant.

5. Photometric Requirements
a. Luminaire performance shall as indicated in the lighting fixture schedule.
b. Luminaire performance shall be judged against the specified minimum luminance in the specified pattern for a particular application.
c. Luminaire lighting performance shall be adjusted (depreciated) for the minimum life expectancy
1) The performance shall be adjusted (depreciated) by using the LED manufacturer's data or the data from the IESNA Standard TM-21 test report, whichever one results in a higher level of lumen depreciation.
2) The ratio of the peak-to-zenith maximum candela ratios shall be – 1.94:1 @ 127.5 degrees.
d. The luminaire may be determined to be compliant photometrically, if:
1) The initial minimum luminance level is achieved in 100% of the area of the specified lighting pattern.
2) The measurements shall be calibrated to standard photopic calibrations.

6. Thermal Management
a. The thermal management (of the heat generated by the LEDs) shall be of sufficient capacity to assure proper operation of the luminaire over the expected useful life.
b. The LED manufacturer's maximum junction temperature for the expected life shall not be exceeded at the average operating ambient
c. The LED manufacturer's maximum junction temperature for the catastrophic failure shall not be exceeded at the maximum operating ambient temperature
d. The luminaire shall have a UL or CSA rating.
e. The Driver manufacturer's maximum case temperature shall not be exceeded at the maximum operating ambient temperature. Thermal management shall be passive by design. The use of fans or other mechanical cooling devices shall not be allowed.

7. Optics
a. Optics shall consist of high performance advanced optical film, diffuser, and metal reflector.
b. Optics shall eliminate source image.

8. Digital Controls
a. Each luminaire shall be equipped with one (1) digital RJ45 port and interface with other digital control equipment.

b. Connect to devices compatible with 0 to 10V Analog Control Protocol, Class 2, capable of sinking 0.6ma per driver at a low end of 0.3V. Limit the number of drivers on each 0-10V control output based on voltage drop and control capacity.
c. Digital manual wall control shall integrate with the SSL luminaire via CAT5E cable and be self-commissioning.
d. Digital occupancy sensor shall integrate with the SSL luminaire via CAT5E cable and be self-commissioning.
e. Digital photocell shall integrate with the SSL luminaire via CAT5E cable and be self-commissioning.
f. Integral Daylight Dimming or Day lighting Dimming with Occupancy Detections sensors shall be provided as per specification. Sensor shall be designed to be low profile to minimize appearance in luminaire.
g. Lumen Management: The luminaire shall be capable of continuously monitoring system performance to allow for constant lumen management/compensation function. Lumen output to be maintained at 80% for life of the luminaire, initial input to be 80% of rated input watts and climb to rated watts by end of rated life. Energy savings shall be 20% initially and 10% over the rated life of the luminaire.
h. Each luminaire shall be supplied with a unique network address. This address shall be printed on two identification labels. One label shall be permanently affixed to the luminaire and one label shall be easily removed for network control commissioning purposes. Both labels shall be in a location that is easily accessible by the installing Subcontractor.
i. Control Input:
    1) 4-Wire (0-10V DC Voltage Controlled) Dimming Drivers:
        a) Must meet IEC 60929 Annex E for General White Lighting LED drivers
        b) Must meet ESTA E1.3 for RGBW LED drivers
    2) Digital (DALI Low Voltage Controlled) Dimming Drivers:
        a) Must meet IEC 62386

9. Luminaire Identification
    a. Each luminaire shall have the manufacturer's name, trademark, model number, serial number, date of manufacture (month-year), and lot number as identification permanently marked inside each unit and the outside of each packaging box.
    b. The following operating characteristics shall be permanently marked inside each unit: rated voltage and rated power in Watts and Volt-Ampere.
10. Luminaire manufacturing requirements
    a. The luminaires shall be manufactured in accordance with a manufacturer quality assurance (QA) program. The QA program shall include two types of quality assurance: (1) design quality assurance and (2) production quality assurance. The production quality assurance shall include statistically controlled routine tests to ensure minimum performance levels of the modules built to meet this specification. These tests shall include: CCT, CRI, Lumen output, and wattage. Tests shall be recorded, analyzed and maintained for future reference.
    b. QA process and test results documentation shall be kept on file for a minimum period of seven years.
11. Lighting Fixture Selection
    a. Fixture type A:
        1) Distribution: Direct/Indirect
        2) Lumens: 4000
        3) Lumens/Watt:
        4) CRI: 80

5) Color Temperature: 3500K
6) Fixture Characteristics: 4 FT direct/indirect pendant mounted LED lighting fixture with 70% uplight, 30% downlight with dimming driver. Fixture life shall be rated for at least 50,000 hours. Fixture shall have minimum 92% average reflective white polyester powder coat on interior components. Fixture shall be 20 gauge die-formed C.R.S. with diffused acrylic shielding, Color and finish shall be textured matte white. Fixture shall be maximum 8" wide and 2" deep.

b. Fixture type B1:
1) Distribution: Diffused light
2) Lumens: 4000
3) Lumens/watt:
4) CRI: 80
5) Color Temperature: 3500K
6) Input Voltage: UNV
7) Fixture Characteristics: 4 FT narrow strip LED lighting pendant mounted fixture with dimming driver and diffused acrylic lens. Fixture life shall be rated for at least 50,000 hours. Fixture shall be 22-gauge die-formed C.R.S. Color and finish shall be matte white. Fixture shall be maximum 3" wide and 2" deep.

c. Fixture type B2:
1) Distribution: Diffused light
2) Lumens: 4000
3) Lumens/watt:
4) CRI: 80
5) Color Temperature: 3500K
6) Input Voltage: UNV
7) Fixture Characteristics: 4 FT narrow strip LED lighting surface mounted fixture with dimming driver and diffused acrylic lens. Fixture life shall be rated for at least 50,000 hours. Fixture shall be 22-gauge die-formed C.R.S. Color and finish shall be matte white. Fixture shall be maximum 3" wide and 2" deep.

d. Fixture type C1:
1) Distribution: Diffused light
2) Lumens: 4100
3) Lumens/watt:
4) CRI: 80
5) Color Temperature: 3500K
6) Input Voltage: UNV
7) Fixture Characteristics: 4 FT LED lighting pendant mounted fixture with 0-10V dimming driver and square frosted acrylic lens. Fixture life shall be rated for at least 50,000 hours. Color and finish shall be matte white. Fixture shall be maximum 3" wide and 4" deep.

e. Fixture type C2:
1) Distribution: Diffused light
2) Lumens: 4100
3) Lumens/watt:
4) CRI: 80
5) Color Temperature: 3500K
6) Input Voltage: UNV

7) Fixture Characteristics: 4 FT LED lighting surface mounted fixture with 0-10V dimming driver and square frosted acrylic lens. Fixture life shall be rated for at least 50,000 hours. Color and finish shall be matte white. Fixture shall be maximum 3" wide and 4" deep.

f. Fixture type D:
1) Distribution: Diffused light
2) Lumens: 800
3) Lumens/watt: 113
4) CRI: 80
5) Color Temperature: 3500K
6) Input Voltage: UNV
7) Fixture Characteristics: 4 FT LED lighting pendant mounted fixture with dimming driver and flat diffused acrylic lens. Mounting shall have 1/16" diameter adjustable steel leveling aircraft cable. Fixture life shall be rated for at least 50,000. Fixture shall be extruded aluminum with die cast end plates. For mounting 1/6" diameter adjustable steel leveling aircraft cable and mounting hardware necessary for grid and hardpan ceiling application shall be provided. Color and finish shall be matte white. Fixture shall be maximum 4.5" wide and 4.5" deep.

g. Fixture type E1:
1) Distribution: Diffused light
2) Lumens: 8000
3) Lumens/watt:
4) CRI: 80
5) Color Temperature: 3500K
6) Input Voltage: UNV
7) Fixture Characteristics: 2 FT x 4 FT pendant mounted LED lighting fixture with 0-10V dimming driver and round shaped ribbed acrylic diffuser lens. Fixture life shall be rated for at least 50,000 hours. Color and finish shall be matte white. Fixture shall be maximum 9" wide and 3" deep.

h. Fixture type E2:
1) Distribution: Diffused light
2) Lumens: 8000
3) Lumens/watt:
4) CRI: 80
5) Color Temperature: 3500K
6) Input Voltage: UNV
7) Fixture Characteristics: 2 FT x 4 FT surface mounted LED lighting fixture with 0-10V dimming driver and round shaped ribbed acrylic diffuser lens. Fixture life shall be rated for at least 50,000 hours. Color and finish shall be matte white. Fixture shall be maximum 9" wide and 3" deep.

i. Fixture type F:
1) Distribution: Indirect light
2) Lumens: 4000
3) Lumens/watt: 95.3
4) CRI: 80
5) Color Temperature: 3500K
6) Input Voltage: UNV
7) Fixture Characteristics: 2 FT x 4 FT backlit curved lens LED lighting recessed mounted fixture with dimming driver and diffused acrylic lens. Fixture life shall be rated for at least

60,000 hours. Fixture shall be 22-gauge die-formed C.R.S. Fixture shall have hinged, flat, extruded aluminum door frame with optical assembly. Color and finish shall be matte white. Fixture shall be maximum 24" wide and 4.5" deep.

j. Fixture type G:
   1) Distribution: Indirect light
   2) Lumens: 4000
   3) Lumens/watt: 85.2
   4) CRI: 80
   5) Color Temperature: 3500K
   6) Input Voltage: UNV
   7) Fixture Characteristics: 2 FT x 2 FT backlit curved lens LED lighting recessed mounted fixture with dimming driver and diffused acrylic lens. Fixture life shall be rated for at least 60,000 hours. Fixture shall be 22-gauge die-formed C.R.S. Fixture shall have hinged, flat, extruded aluminum door frame with optical assembly. Color and finish shall be matte white. Fixture shall be maximum 24" wide and 4.5" deep.

k. Fixture type H1:
   1) Distribution: Diffused light
   2) Lumens: 7000
   3) Lumens/watt:
   4) CRI: 80
   5) Color Temperature: 3500K
   6) Input Voltage: UNV
   7) Fixture Characteristics: 8FT pendant mounted LED lighting fixture with 0-10V dimming driver and round shaped ribbed acrylic diffuser lens. Fixture life shall be rated for at least 50,000 hours. Color and finish shall be matte white. Fixture shall be maximum 9" wide and 3" deep.

l. Fixture type H2:
   1) Distribution: Diffused light
   2) Lumens: 7000
   3) Lumens/watt:
   4) CRI: 80
   5) Color Temperature: 3500K
   6) Input Voltage: UNV
   7) Fixture Characteristics: 8FT surface mounted LED lighting fixture with 0-10V dimming driver and round shaped ribbed acrylic diffuser lens. Fixture life shall be rated for at least 50,000 hours. Color and finish shall be matte white. Fixture shall be maximum 9" wide and 3" deep.

m. Fixture type I:
   1) Distribution: Direct/Indirect
   2) Lumens: 4000
   3) Lumens/Watt:
   4) CRI: 80
   5) Color Temperature: 3500K
   6) Fixture Characteristics: 8 FT direct/indirect pendant mounted LED lighting fixture with 70% upplight, 30% downlight and dimming driver. Fixture life shall be rated for at least 50,000 hours. Fixture shall have minimum 92% average reflective white polyester powder coat on interior components. Fixture shall be 20 gauge die-formed C.R.S. with diffused

acrylic shielding, Color and finish shall be textured matte white. Fixture shall be maximum 8" wide and 2" deep.

n. Fixture type J1:
   1) Distribution: Down light
   2) Lumens: 4000
   3) Lumens/Watt:
   4) CRI: 80
   5) Color Temperature: 3500K
   6) Fixture Characteristics: 6" round shaped recessed mounted LED lighting fixture with 0-10v dimming driver. Fixture shall include high performance class 2 C.O.B. LED array. Fixture life shall be rated for at least 55,000 hours. Fixture shall have die-cast aluminum trim housing with forged aluminum heat sink. Galvanized steel splice compartment with driver mounting plate/enclosure. Lensed trim shall be die-cast aluminum frame with micro-prismatic, tempered glass. Color and finish shall be textured matte white. Fixture shall have maximum diameter of 6" and depth shall not be more than 8" deep.

o. Fixture type J2:
   1) Distribution: Down light
   2) Lumens: 4000
   3) Lumens/Watt: 59.7
   4) CRI: 80
   5) Color Temperature: 3500K
   6) Fixture Characteristics: 8" round shaped recessed mounted LED lighting fixture with 0-10v dimming driver. Fixture shall have high power LED on multi-channel metal core PCB. Fixture life shall be rated for at least 60,000 hours. Fixture shall have die-cast aluminum trim housing with forged aluminum heat sink. Galvanized steel splice compartment with driver mounting box/enclosure. Color and finish shall be textured matte white. Fixture shall have maximum diameter of 9" and depth shall not be more than 10" deep.

p. Fixture type K:
   Distribution: Direct/Indirect
   1) Lumens: 4500
   2) Lumens/watt: 94.3
   3) CRI: 80
   4) Color Temperature: 3500K
   5) Input Voltage: UNV
   6) Fixture Characteristics: 2 FT x 4 FT recessed mounted vandal-resistant direct/indirect lensed LED lighting fixture with dimming driver. Fixture life shall be rated for at least 50,000 hours. Fixture shall be 22 gauge die-formed C.R.S. Fixture shall have transparent acrylic lens with 0.236" thick polycarbonate underlay, mounted in 0.050" thick extruded aluminum door frame, flat with mitered corners secured with six tamper-resistant, tri-grove screws. Color and finish shall be matte white. Fixture shall be maximum 24" wide and 5" deep.

2.4 LIGHTING FIXTURE SUPPORT COMPONENTS

A. Comply with Section 26 05 29 "Hangers and Supports for Electrical Systems" for channel- and angle-iron supports and nonmetallic channel and angle supports.

B. Single-Stem Hangers: 1/2-inch steel tubing with swivel ball fittings and ceiling canopy. Finish same as fixture.

C. Twin-Stem Hangers: Two, 1/2-inch steel tubes with single canopy designed to mount a single fixture. Finish same as fixture.

D. Wires: ASTM A 641/A 641M, Class 3, soft temper, zinc-coated steel, 12 gage.

E. Wires for Humid Spaces: ASTM A 580/A 580M, Composition 302 or 304, annealed stainless steel, 12 gage.

F. Rod Hangers: 3/16-inch (5-mm) minimum diameter, cadmium-plated, threaded steel rod.

G. Hook Hangers: Integrated assembly matched to fixture and line voltage and equipped with threaded attachment, cord, and locking-type plug.

2.5 LED FIXTURE

A. Manufacturers:
1. Nichia.
2. Cree.
3. Day-O-Light.
4. Or approved equal.
5. Lumen Output – minimum initial delivered lumen output of the luminaire shall be as follows for the lumens exiting the luminaire in the 0-360 degree zone - as measured by IESNA Standard LM-79-08 in an accredited lab. Exact tested lumen output shall be clearly noted on the shop drawings.
6. Lumen output shall not decrease by more than 20% over the minimum operational life of 50,000 hours at the rated ambient operating temperature.
7. Individual LEDs shall be connected such that a catastrophic loss or the failure of one LED will not result in the loss of the all LEDs within the luminaire.
8. LED Boards shall be suitable for field maintenance and have plug-in connectors. LED boards shall be upgradable.
9. Light Color/Quality:
   a. Correlated Color Temperature (CCT) range as per specification, between 3000K, 3500K and 4000K shall be correlated to chromaticity as defined by the absolute (X, Y) coordinates on the 2-D CIE chromaticity chart. (Edit color temperature per project specification)
   b. Color shift over 6,000 hours shall be <0.007 change in u' v' as demonstrated in IES LM80 report.
   c. The Color Rendition Index (CRI) shall be 80 or greater.
   d. LED boards to be tested for color consistency and shall be within a space of 2.5 MacAdam ellipses on the CIE chromaticity chart.
10. Power Supply and Drive
   a. Driver manufacturers (Drivers to be compatible with the fixtures):
      1) eldoLED.
      2) Nichia.
      3) Cree.
      4) Or approved equal.
   b. Ten-year expected life while operating at maximum case temperature and 90 percent non-condensing relative humidity.

c. Driver shall be UL Recognized under the component program and shall be modular for simple field replacement. Drivers that do not meet these requirements will not be accepted.

d. Electrical characteristics: 120 – 277 volt, UL Listed, CSA Certified, Sound Rated A+. Driver shall be > 80% efficient at full load across all input voltages. Input wires shall be 18AWG solid copper minimum.

11. Dimming: Driver shall be suitable for full-range dimming. LED dimming shall be equal in range and quality to a commercial grade incandescent dimmer. Quality of dimming to be defined by dimming range, freedom from perceived flicker or visible stroboscopic flicker, smooth and continuous change in level (no visible steps in transitions), natural square law response to control input, inaudible in 26db environment, and stable when input voltage conditions fluctuate over what is typically experienced in a commercial environment. Demonstration of this compliance to dimming performance will be necessary for substitutions or prior approval. The luminaire shall be capable of continuous dimming without perceivable flicker over a range of 100 percent to 0.1 percent of rated lumen output with a smooth shut off function.
    a) Dimming shall be controlled by a 0-10V signal.
    b) Driver shall include ability to provide no light output when the analog control signal drops below 0.5V, or the DALI/DMX digital signal calls for light to be extinguished and shall consume 0.5 watts or less in this standby. Control dead band between .5 and .65V shall be included to allow for voltage variation of incoming signal without causing noticeable variation in fixture to fixture output.
    c) Driver shall be capable of configuring a linear or logarithmic dimming curve, allowing fine grained resolution at low light levels.
    d) Driver must be capable of 20 bit dimming resolution for white light LED driver.
    e) Drivers shall track evenly across multiple fixtures at all light levels, and shall have an input signal to output light level that allows smooth adjustment over the entire dimming range.

    2) Flicker: Driver and luminaire electronics shall deliver illumination that is free from objectionable flicker as measured by flicker index (ANSI/IES RP-16-10). At all points within the dimming range from 100-0.1 percent luminaire shall have:
    a) Less than 1 percent flicker index at frequencies below 120 Hz.
    b) Less than 12 percent flicker index at 120 Hz, and shall not increase at greater than 0.1 percent per Hz to a maximum of 80 percent flicker index at 800Hz.

    3) Driver disconnect shall be provided where required to comply with Codes.

    4) The electronics/power supply enclosure shall be internal to the SSL luminaire and be accessible per UL requirements.

    5) The surge protection which resides within the driver shall protect the luminaire from damage and failure for transient voltages and currents as defined in ANSI/IEEE C64.41 2002 for Location Category A, where failure does not mean a momentary loss of light during the transient event.

12. Electrical
    1) Power Consumption: Maximum power consumption, +5% when operating between 120 – 277V (or 346V)

    2) Operation Voltage - The luminaire shall operate from a 60 HZ ±3 HZ AC line over a voltage ranging from 120 VAC to 277 VAC. The fluctuations of line voltage of (+10%) shall have no visible effect on the luminous output.
    a) Adjustment of forward LED voltage, supporting 3V through 60V.
    b) Adjustment of LED current from 200mA to 1.05A at the 100 percent control input point in increments of 1mA.

c) Adjustment for operating hours to maintain constant lumens (within 5 percent) over the 50,000 hour design life of the system, and deliver up to 20 percent energy savings early in the life cycle.

3) Electrical connections between normal power and driver must be modular utilizing a snap fit connector. All electrical components must be easily accessible after installation and be replaceable without lowering the luminaire.

4) All electrical components shall be RoHS compliant.

PART 3 - EXECUTION

3.1 EXECUTION REQUIREMENTS

A. Refer to DDC General Conditions for execution requirements.

3.2 INSTALLATION

A. Lighting fixtures: Set level, plumb, and square with ceilings and walls. Install lamps in each fixture.

B. Suspended Lighting Fixture Support:
1. Pendants and Rods: Where longer than 48 inches, brace to limit swinging.
2. Stem-Mounted, Single-Unit Fixtures: Suspend with twin-stem hangers.
3. Continuous Rows: Use tubing or stem for wiring at one point and tubing or rod for suspension for each unit length of fixture chassis, including one at each end.

C. Connect wiring according to Section 260519 "Low-Voltage Electrical Power Conductors and Cables."

3.3 FIELD QUALITY CONTROL

A. Test for Emergency Lighting: Interrupt power supply to demonstrate proper operation. Verify transfer from normal power to battery and retransfer to normal.

B. Prepare a written report of tests, inspections, observations, and verifications indicating and interpreting results. If adjustments are made to lighting system, retest to demonstrate compliance with standards.

3.4 PROGRAMMING

A. Contractor shall provide programming of the lighting fixtures and associated lighting controls as indicated in the design documents and in compliance of 2016 NYCECC. Submit a controls programming submittal for review and approval by the Commissioner prior to programming. Submittal shall include a matrix of lighting control scheme including lighting shutoff time period for each space type.

END OF SECTION 26 51 00

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

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