Building 77 141 Flushing Ave, Suite 801 Brooklyn, NY 11205

INVITATION FOR BIDS

RESTORATION OF BUILDING 275 INDOOR SUBSTATION PW 3820

Contact Information:

Lloyd Blackwood Project Manager Iblackwood@bnydc.org [718-907-5930]

Overview of Sections:

- A. Project Information
- B. Conditions Precedent for BNYDC to Consider a Bid Including Pertinent Dates
- C. Contract Particulars
- D. Minority and Women Owned Business Enterprise Participation
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Overview of Exhibits:

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- Exhibit B Form of Bid Bond
- Exhibit C Experience Questionnaire
- Exhibit D Declaration of Understanding
- Exhibit E Confirmation of PASSPort Compliance
- Exhibit F Doing Business Data Form
- Exhibit G M/WBE Information Form
- Exhibit H Form of Contract
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 - Health and Safety Plan
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- Exhibit M Project Drawings and Specifications
- Exhibit N Additional M/WBE Provisions
- Exhibit O –M/WBE Utilization Plan

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A. PROJECT INFORMATION

The Brooklyn Navy Yard Development Corporation ("BNYDC") is issuing this Invitation for Bids ("IFB") to seek bids ("Bids" and each, a "Bid") from entities ("Bidders" and each, a "Bidder") interested in performing the Restoration of Building 275 Indoor Substation (the "Project").

 <u>PROJECT SITE(S)</u>: BUILDING 275 Brooklyn Navy Yard 63 Flushing Avenue, Brooklyn NY, 11205

2. DESCRIPTION OF PROJECT:

Building 275, is located within the Brooklyn Navy Yard property. The substation within Building 275, referred to as Substation 275, is located on the ground floor and was inundated by at least 32" of brackish water during Hurricane Sandy, resulting in significant damage to the substation. Under this project, the Substation 275 will be replaced in its entirety, constructed, and installed on an elevated platform within existing electrical room space. Refer to the following for the general scope of work:

- a. Electrical:
 - i. The existing Building 275 Substation is fed from an outdoor substation just outside of building 275. The low voltage switchgear is rated for 120/208V. To minimize interruption to the building's electrical service, temporary 120/208V outdoor rated switchgear for all the 120/208V loads that are currently connected to the existing switchgear shall be provided.
 - ii. The existing 120/208V switchgear will be removed and replaced with new 120/208V front access only switchboard. An existing 225kVA 120/208-480V step-up transformer will be relocated to the elevator machine room. All existing low voltage metering equipment, disconnect switches, and distribution panelboards will be removed and replaced. The existing 120/208V feeder shall be pulled back to the nearest junction box. Feeds will be spliced, extended, and routed through the interior of Building 275 to the new switchboard location. Provide new switchboard and all associated electrical equipment for building 275 within the new elevated location (see structural description for additional details). The new substation equipment includes but is not limited to the following: 120/208V switchboard rated for 4000A, two (2) 120/208V distribution panelboards, and three (3) sub-feed metering units. The 120/208V switchboard shall be furnished with ten (10) breakers, two (2) shall be spare breakers, and eight (8) shall individually feed the following: five (5) distribution panels, building 132, Admiral Row Building, and an elevator step-up transformer. The feeders associated with all the switchboard branch breakers shall be spliced, extended, and outed within the footprint of Building 275 to the elevated switchboard.

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- b. Mechanical:
 - i. Remove and dispose of the existing exhaust fan within the existing electrical room. Provide new ceiling mounted, electric unit heater on elevated platform within the electrical room. Provide new room exhaust fans with interlocked mechanical louvers.
- c. Architectural:
 - i. The existing single entry-door to the electrical room shall be replaced with an equivalent flood-rated door. Provide service stairs to the new elevated platform within the electrical room.
- d. Structural:
 - i. Construct a new interior platform attached to the existing concrete walls and access stairs inside the existing building. Support columns in the basement have been identified as being corroded. Reinforcement/replacement will be required.
- 3. <u>PROJECT SPECIFICATION DOCUMENTS AVAILABLE</u>: Electronically from the following link: <u>https://brooklynnavyyard.org/contract-opportunities</u>
- 4. M/WBE PARTICIPATION GOAL: 30%

B. PERTINENT DATES AND CONDITIONS PRECEDENT FOR BNYDC TO CONSIDER A BID

- <u>MANDATORY PRE-BID MEETING</u>. A <u>mandatory</u> pre-bid submission conference will be held at 9:00 am on May 15, 2025 at BNYDC's offices, 141 Flushing Avenue, Building 77, 8th Floor, Suite 801, Brooklyn, NY 11205. All Bidders who plan to attend should contact Lloyd Blackwood via email (Iblackwood@bnydc.org) to provide names of attendees and email addresses so that attendees can receive a visitor QR code for entry into the Brooklyn Navy Yard (the "Yard"). [The meeting will be immediately followed by a site walkthrough. All attendees must bring and wear their own hard hats.
- 2. <u>INQUIRIES</u>. Any explanation desired by Bidders regarding the meaning or interpretation of this IFB must be emailed and received by BNYDC no later than 9:00am on June 5, 2025. BNYDC will evaluate the need to respond to inquiries received. No verbal responses will be provided, and any information given to a prospective Bidder will be furnished to all prospective Bidders as an addendum to this IFB (an "Addendum"). Except as provided below, all questions must be directed only to Lloyd Blackwood, Brooklyn Navy Yard Development Corporation, at Iblackwood@bnydc.org.
- 3. <u>BID SUBMISSION DEADLINE</u>. Written sealed Bids must be received at BNYDC's office on or no later than 12:00pm (noon) on June 26, 2025 (the "Bid Submission Deadline"). If Bidder is submitting a request for a full or partial waiver of the M/WBE Participation Goal set forth in Section D hereof, they shall submit such waiver request no later than 12:00pm (noon) on June 18, 2025, which is eight (8) calendar days prior to the Bid Submission Deadline.
- 4. <u>BID SECURITY</u>. Bidder must submit with the Bid either a bid deposit by certified check or a bid bond in the form attached hereto as <u>Exhibit B</u> in an amount of ten percent (10%) of the Bid.

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Note that Bid Security is not required for any Bid submitted for an amount under Two Hundred Fifty Thousand Dollars (\$250,000).

- 5. <u>PASSPORT COMPLIANCE</u>. Bidders are required to be registered and up-to-date in PASSPort prior to submitting a Bid to this IFB. Each Bidder must include its PASSPort identification number on the Confirmation of PASSPort Compliance form attached hereto as <u>Exhibit E</u>.
- 6. <u>PROJECT SCHEDULE</u>. Below are the following pertinent dates:
 - a. Anticipated selection of Bid by and notification from BNYDC to winning Bidder on July 25, 2025;
 - b. Upon selection, the selected Bidder must execute a Contract substantially in the form attached hereto as <u>Exhibit H</u>. Please note that, if any Bidder desires any change(s) to the Contract form attached as <u>Exhibit H</u>, it must include any such proposed change(s) as part of its Bid. BNYDC does not agree to necessarily accept any such proposed Contract changes, but BNYDC will not consider any Contract changes that are not provided as part of a Bid. The contents of the selected Bid, together with this IFB and any formal questions and answers provided during the bid process may be incorporated into any final Contract at BNYDC's discretion;
 - c. Commence work on Project immediately following the Notice to Proceed to be issued by BNYDC for this Project (the "NTP").
 - d. Substantial completion of the Project (as defined in the Contract attached as <u>Exhibit H</u> hereto) no later than Section C.1 Time Of Completion (the "Substantial Completion Date").

C. CONTRACT PARTICULARS

- 1. <u>TIME OF COMPLETION</u>. 516 consecutive calendar days from the issuance of the NTP (17months).
- 2. <u>LIQUIDATED DAMAGES</u>. \$1000 for each calendar day beyond Substantial Completion Date. Failure to comply with the M/WBE requirements described in this IFB may also result in liquidated damages, as described further in Exhibit N.
- 3. <u>RETAINAGE</u>. As provided in the Contract attached hereto as <u>Exhibit H</u>.
- 4. <u>CONTRACT LENGTH</u>. The anticipated Contract length is 2.5 years.

D. MINORITY AND WOMEN-OWNED BUSINESS ENTERPRISE PARTICIPATION

The specific requirements of minority-owned business enterprises ("MBEs") and women-owned business enterprises ("WBEs") participation for this Contract are detailed below. Additional provisions regarding this IFB's requirements relating to M/WBEs can be found in Exhibit N (Additional M/WBE Provisions) attached hereto.

Bidders must comply with all applicable MBE and WBE requirements for this Contract.

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 <u>M/WBE PROGRAM</u>. 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 "MBEs and 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. BNYDC endorses these goals and has adopted an M/WBE Program to further participation by MBEs and WBEs for its projects. All Bidders shall comply with all requirements of BNYDC's M/WBE Program applicable to this IFB.

2. M/WBE PARTICIPATION GOAL:

- a. The percentage goal for M/WBE participation (the "Participation Goal") for the Contract is thirty percent (30%) of the total dollar value of the Contract. The Participation Goal represents a percentage of the total dollar value of the Contract that may be achieved by awarding subcontracts to firms certified with DSBS or DMWBD (each as defined below) as MBEs or WBEs, and/or by crediting the participation of prime contractors and/or qualified joint ventures as provided in Section D.2.d and Section D.2.e below, unless the goals have been waived or modified by BNYDC in accordance with Exhibit N, Section A.
- b. M/WBE firms must be certified by either (i) the NYC Department of Small Business Services ("DSBS"), or (ii) Empire State Development's Division of Minority and Women's Business Development ("DMWBD") to credit such firms' participation toward attainment of the Participation Goal. Such certification must occur prior to the firms' commencement of work. A list of M/WBE firms may be obtained (i) 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 Street, New York, New York, 10038, 7th Floor, and (ii) from the ESD website at www.ny.newnycontracts.com. Eligible firms that have not yet been certified may contact DSBS or DMWBD for additional information on how to get certified. No credit shall be given for participation by a graduate M/WBE, as defined in Section 6-129(c)(20).
- c. The Participation Goal is a material term of the Contract and the selected Bidder shall be subject to the BNYDC approved Participation Goal, unless the goals have been waived or modified by BNYDC in accordance with Exhibit N, Section A.
- d. An M/WBE Bidder shall be permitted to count its own participation toward fulfillment of the Participation Goal. The value of an M/WBE Bidder's participation shall be determined by subtracting from the total value of the Contract any amounts that the Bidder will pay to direct Subcontractors. A Bidder 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. If a Bidder is not an M/WBE, it must meet the Participation Goal through the awarding of subcontracts to firms certified with DSBS or DMWBD as MBEs or WBEs.

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e. A Bidder that is a Qualified Joint Venture (as defined in Section 6-129, and as discussed further in Section 5) shall be permitted to count a percentage of its own M/WBE participation toward fulfillment of the Participation Goal. The value of Bidder's participation shall be determined by subtracting from the total value of the Contract any amounts that Bidder 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.

3. M/WBE PROPOSAL SUBMISSION FORMS.

- a. Bidders shall be required to submit with its bid a completed M/WBE Utilization Plan in the form attached as Exhibit O indicating:
 - i. whether the Bidder is an MBE or WBE, or Qualified Joint Venture;
 - ii. the percentage of work it intends to award to direct Subcontractors;
 - iii. in cases where the Bidder 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 copies of DSBS or DMWBD certifications for each proposed MBE or WBE subcontractor listed in its M/WBE Utilization;
 - iv. the Bidder's required certification and affirmations, as attached as Exhibit O to this IFB. In the event that this M/WBE Utilization Plan indicates that the bidder does not intend to meet the Participation Goal, the bid shall be deemed non-responsive, unless the goals have been waived or modified by BNYDC in accordance with Exhibit N, Section A.
- b. THE BIDDER MUST COMPLETE AN M/WBE UTILIZATION PLAN IN THE FORM ATTACHED HERETO AS EXHIBIT O. AN M/WBE UTILIZATION PLAN SUBMITTED BY THE BIDDER WHICH DOES NOT INCLUDE THE VENDOR CERTIFICATION AND REQUIRED AFFIRMATIONS WILL BE DEEMED TO BE NON-RESPONSIVE, UNLESS A FULL WAIVER OF THE PARTICIPATION GOAL IS GRANTED IN ACCORDANCE WITH EXHIBIT N, SECTION A. IN THE EVENT THAT BNYDC DETERMINES THAT THE BIDDER HAS SUBMITTED AN M/WBE UTILIZATION PLAN WHERE THE VENDOR CERTIFICATION AND REQUIRED AFFIRMATIONS ARE COMPLETED BUT OTHER ASPECTS OF THE M/WBE UTILIZATION PLAN ARE NOT COMPLETE, OR CONTAIN A COPY OR COMPUTATION ERROR THAT IS AT ODDS WITH THE VENDOR CERTIFICATION AND AFFIRMATIONS, THE BIDDER WILL BE NOTIFIED BY BNYDC AND WILL BE GIVEN FOUR (4) CALENDAR DAYS FROM RECEIPT OF NOTIFICATION TO CURE THE SPECIFIED DEFICIENCIES AND RETURN A COMPLETED M/WBE

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UTILIZATION PLAN TO BNYDC. FAILURE TO DO SO WILL RESULT IN A DETERMINATION THAT THE BID IS NON- RESPONSIVE. RECEIPT OF NOTIFICATION IS DEFINED AS THE DATE NOTICE IS E-MAILED (IF THE BIDDER HAS PROVIDED AN E-MAIL ADDRESS), OR NO LATER THAN FIVE (5) CALENDAR DAYS FROM THE DATE OF MAILING OR UPON DELIVERY, IF DELIVERED.

c. The successful Bidder (each Bidder who is awarded a Contract, a "Contractor") shall, within 30 days of issuance by BNYDC of a NTP, 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. BNYDC 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)). In the event that the Contractor's selection of a Subcontractor is disapproved, the Contractor shall have a reasonable time to propose alternate subcontractors.

4. STATEMENTS SUBMITTED WITH REQUESTS FOR PAYMENT.

- a. The Contractor shall, with each voucher for payment, and/or periodically as BNYDC may require, submit statements, certified under penalty of perjury, which shall include, but not be limited, to:
 - i. 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;
 - ii. 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
 - iii. the dates and amounts paid to each MBE or WBE.
- b. The Contractor shall also submit, along with its voucher for final payment:
 - i. 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.
- c. If payments made to, or work performed by, MBEs or WBEs are less than the amount specified in the Contractor's M/WBE Utilization Form, BNYDC shall take appropriate action, in accordance with the enforcement provisions described in the Contract and in Exhibit N, Section G, unless the goals have been waived or modified by BNYDC in accordance with Exhibit N, Section A.
- 5. <u>MODIFICATIONS BASED ON CHANGE ORDERS</u>. Where an M/WBE Utilization Plan has been submitted, and the Bidder requests a change order the value of which exceeds the greater of 10 percent of the Contract, as applicable, or \$500,000, BNYDC shall review the scope of work

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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.

6. <u>OTHER M/WBE REQUIREMENTS</u>. The Contract and Exhibit N contain additional provisions related to the M/WBE requirements applicable to this IFB regarding, without limitation, waivers, modifications, substitutions, indefinite quantity contracts, progress reviews, evaluations and assessments, and enforcement. **PLEASE BE SURE THAT YOU REVIEW AND UNDERSTAND ALL OF THE REQUIREMENTS APPLICABLE TO THIS IFB AND THE CONTRACT PRIOR TO SUBMITTING YOUR PROPOSAL.**

E. SPECIAL REQUIREMENTS

- 1. MISCELLANEOUS CONDITIONS
 - a. <u>NON-BINDING ACCEPTANCE OF QUALIFICATIONS</u>. This IFB does not commit BNYDC to award a contract for any work or services described herein.
 - b. <u>MODIFICATIONS</u>. Bidders may be asked to make such revisions, additions or deletions to their Bids as may be required by BNYDC.
 - c. <u>RESERVED RIGHTS</u>. All Bid material submitted becomes the property of BNYDC and BNYDC reserves the right at its sole discretion to:
 - i. Reject any and all Bids received in response to this IFB at any time prior to signing of a contract with respect to the Project;
 - ii. Award a contract to other than the lowest Bidder;
 - iii. Waive, modify or correct any irregularities in Bids received, after notification to the Bidder;
 - iv. Change the structure of the proposed Bid, if such is in the interest of BNYDC;
 - v. Negotiate the final scope, staff participation, and Bid before entering into contract with successful Bidder;
 - vi. Revise the Bid as BNYDC may require subsequent to receipt of a competitively bid proposal for the Project;
 - vii. Extend the time for submission of all Bids after notification to all prospective Bidders;
 - viii. Terminate negotiations with a selected Bidder and select the next most responsive Bidder, or take such other action as deemed appropriate if negotiations fail to result in a signed contract within a reasonable amount of time from the commencement of negotiations;
 - ix. Terminate or modify the IFB process at any time and reissue the IFB;
 - x. Approve or reject any sub-contractor proposed by the Bidder; and

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xi. Request a change of any sub-contractor at any time in the contract process.

2. CONTRACT REQUIREMENTS.

- a. Any Bidder awarded a contract as a result of this IFB process will be required to sign a contract substantially in the form as attached hereto as <u>Exhibit H</u> (the "Contract"). If a Bidder desires any material or substantive change(s) to the Contract, it must include any such proposed change(s) in its response to this IFB. The contents of the selected Bid, together with this IFB and any formal questions and answers provided during the Bid processes, may be incorporated into any final Contract at BNYDC's discretion. The anticipated Contract length is 2.5 years.
- b. Any information which may have been released verbally or in writing prior to the issuance of the IFB shall be deemed preliminary in nature and bind neither BNYDC nor the Bidder.
- c. Any Bidder awarded a contract as a result of this IFB will be required to obtain clearance through the City's Procurement and Sourcing Solutions Portal ("PASSPort"). PASSPort moves the VENDEX process online, eliminating paper submissions. Since PASSPort clearance is a pre-requisite to BNYDC's award of a contract, Bidders are required to be registered and up-to-date in PASSPort prior to submitting their response to this IFB and to include their PASSPort identification number with submission of their Bid. Non-compliance with these submission requirements shall result in the disqualification of the Bid and/or the Bidder and/or the cancellation of any contract after its award.
- d. Notice to Bidders: Pursuant to Local Law 34 of 2007, amending the City's Campaign Finance Law, the City is required to establish a computerized database containing the names of any "person" that has "business dealings with the city" as such terms are defined in the Local Law. In order for the City to obtain necessary information to establish the required database, vendors responding to this solicitation are required to complete the Doing Business Data Form attached as Exhibit F hereto and return it with the Bid. (If the responding vendor is a proposed joint venture, the entities that comprise the proposed joint venture must each complete a Data Form.) If the City determines that a vendor has failed to submit a Data Form or has submitted a Data Form that is not complete, the vendor will be notified by the agency and will be given four (4) calendar days from receipt of notification to cure the specified deficiencies and return a complete Data Form to the agency. Failure to do so will result in a determination that the Bid is non-responsive. Receipt of notification is defined as the day notice is e-mailed or faxed (if the vendor has provided an e-mail address or fax number), or no later than five (5) days from the date of mailing or upon delivery, if delivered.
- 3. SPECIAL REQUIREMENTS
 - a. Each Bidder (or the "Prime Contractor") is responsible for project management of entire project.

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F. BID SUBMISSION DOCUMENTS ("BSDs")

BNYDC <u>requires</u> that all BSDs listed below be completed and submitted as instructed in this IFB. Failure to submit the below forms, or submitting them improperly, may result in BNYDC's rejection of the Bid.

- Bid Form: Properly executed and sealed in the form attached as Exhibit A.
- Bid Security: If required per the IFB, completed form attached as Exhibit B.
- Experience Questionnaire: Completed form attached as Exhibit C.
- Declaration of Understanding: Completed and executed declaration attached as Exhibit D.
- <u>Confirmation of PASSPort Compliance</u>: Completed confirmation attached as <u>Exhibit E</u>.
- Doing Business Data Form: Completed form attached as Exhibit F.
- M/WBE Information Form: Completed form attached as Exhibit G.
- M/WBE Utilization Plan: Completed form attached as Exhibit O.
- Addenda: Acknowledged receipt of any Addendum to this IFB by attaching a signed copy of the Addendum to Bidder's Bid.
- Contract Revisions: If a Bidder desires any material or substantive change(s) to the Contract, Bidder must include any such proposed change(s) in its response to this IFB.
- [Environmental Certification Form: Completed form attached as Exhibit I: Completed form attached as Exhibit I certifying that they have reviewed the Site Management Plan Exhibit K and Excavation Work Plan Exhibit J and that all work will be completed in accordance with such documents.]

BNYDC appreciates your interest in this IFB and looks forward to receiving your Bid.

<u>EXHIBIT A</u>

BID FORM BROOKLYN NAVY YARD DEVELOPMENT CORPORATION BID FOR FURNISHING ALL LABOR AND MATERIAL FOR:

PROJECT: RESTORATION OF BUILDING 127 INDOOR SUBSTATION			
CONTRACT #:			
Name of Bidder:			
Bidder is a(n): Individual Partnership (Check or	p □ Corporation □ LLC □ ne, whichever applies)		
Business Address:			
Business Telephone Number:			
Home Address (If Individual):			
If Bidder is a Partnership	o or an LLC, fill in the following blanks:		
Name of Partners/Member	Home Address of Partner/Member		
1			
2			
3			
	ration, fill in the following blanks:		
Organized under the laws of the State of			
Admitted to do business in New York on	:		



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Name and Home Address of President:

Name and Home Address of Secretary:

Name and Home Address of Treasurer:

Other Interested Parties, Persons, or Companies (State None if None.)

|--|

Address: _____

Name: _____

Address: _____

Bidder certifies, under penalty of perjury (New York State Penal Law §210.45), that:

- a) Bidder, if an individual or a partner in a partnership, is of lawful age and the only one interested in this bid; and no other person, firm partnership LLC or corporation other Bidder has any interest in this bid, or in the Contract if awarded; and
- b) 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; and
- c) Unless otherwise required by law, the prices quoted in this bid have not been disclosed by the bidder and will not be disclosed by the bidder prior to bid opening, directly or indirectly, to any other bidder or to any competitor; and
- No attempt has been made or will be made by the Bidder to induce any other person, partnership, LLC or corporation to submit or not to submit a bid for the purpose of restricting competition; and
- e) No councilman or other officer, director or employee or person whose salary is payable in whole or in part from the Treasury of the City of New York or BNYDC 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; and

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f) Bidder is not in arrears to the City of New York or BNYDC upon debt or contract or taxes, and is not a defaulter, as surety or otherwise, upon any obligation of the City of New York or BNYDC and has not been declared not responsible, or disqualified, by BNYDC or any agency of the City of New York or State of New York, nor is there any proceeding pending relating to the responsibility of qualification of the bidder to receive public contracts except ______

_; and

- g) Bidder has paid all applicable City income, excise and other taxes for all years it has conducted business activities in New York City; and
- h) Bidder has complied with since its effective date and will continue to comply with the provisions of §6-108 of the Administrative Code of the City of New York; and
- i) Bidder has complied with since its effective date and will continue to comply with the provisions of §220, §220a and §230 of the New York State Labor Law; and
- j) Bidder has complied with since its effective date and will continue to comply with §6-109 of the Administrative Code of the City of New York; and
- Bidder has complied with since its effective date and will continue to comply with § 24-216 of the Administrative Code of the City of New York; and
- I) Bidder agrees to post notices setting forth the requirements of the aforesaid laws (items h, i, j and k above) 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 Bidder have been finally accepted by BNYDC; and
- m) Bidder has complied with since its effective date and will continue to comply with Executive Order No. 50, dated, April 25, 1980, on Equal Employment Compliance of the Contract. The required Employment Report must be submitted as part of the bid.
- n) Bidder by submitting this bid certifies that it now has and will continue to have the financial capability to fully perform the Project required for the Contract. The award of the Contract will be made in reliance upon such certification. Therefore, upon request by BNYDC, Bidder will submit proof of financial capability, as BNYDC requires.

Bidder understands that any breach or violation of the foregoing may subject Bidder to damages, liquidated or otherwise, cancellation of the Contract, if awarded, and suspension of Bidder for a period of three years.

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BID PRICE

A.	Price for Material Sold and Delivered	\$
В.	Price for Labor	\$
	TOTAL PRICE (Add A + B)	ć
		\$



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IN WITNESS WHEREOF, Bidder states that they have visited and examined the site of the Project. Bidder affirms that they have carefully examined the Contract form provided. Bidder agrees that it will execute the Contract unchanged in form and faithfully perform the Project required thereunder for the price set forth above, and have executed this Bid Form on the _____ day of _____ 20___

Bidder's Name:
Ву:
By: (Signature of Individual, Partner, Member or Corporate Officer)
Title:
Address:
(Corporate or LLC Seal)
Attest: Secretary of Corporate or LLC Bidder
[ACKNOWLEDGMENT, IF AN INDIVIDUAL
STATE OF NEW YORK)
COUNTY OF)
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
described in and who executed the foregoing instrument and that the several matters therein stated are in all respects true.
Notary Public
[ACKNOWLEDGMENT, IF A PARTNERSHIP

STATE OF NEW YORK)

SS.: COUNTY OF _____)



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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 a member

of, the firm described in and which executed the foregoing instrument and that the several matters therein stated are in all respects true.

Notary Public]

ACKNOWLEDGMENT, IF A LIMITED LIABILITY COMPANY

STATE OF NEW YORK)

: ss.: COUNTY OF _____)

On the _____ day of ______ in the year 20___, before me personally came ______, to me known, who, being by me duly sworn, did depose and say that that he/she is a member of ______ the limited liability company described in and which executed the foregoing instrument; and that he/she signed his/her name thereto by authority of the members of said limited liability company and that the several matters therein stated are in all respects true.

Notary Public]

[ACKNOWLEDGMENT, IF A CORPORATION

STATE OF NEW YORK)

: ss.: COUNTY OF)

On the ____ day of _____ in the year 20__, before me personally came _____, to me known, who, being by me duly sworn, did depose and say that that he/she is the _____ of _____ the business described in and which executed the foregoing instrument; and that he/she signed his /her name thereto by authority of the Board of Directors of said corporation and that the several matters therein stated are in all respects true.

Notary Public

BNYDC Project no:							
H2M Contract No: BNYD1901 Restoration of Substation at Building 275 - Brooklyn Navy Yard							
ITEM	63 Flushing Avenue - #300, Brooklyn NY						
NO.	AL REQUIREMENTS AND EXISTING CONDITIONS	QUANTITY	UNIT PRICE	UNIT PRICE	TOTAL COST	TOTAL COST	SUB TOTAL
1	ELECTRICAL ROOM DEMOLITION (DOOR REMOVAL, HOUSEKEEPING PAD REMOVAL, ETC.)	LUMP SUM	N/A	N/A			
ENVIRO	DMENTAL						I
2	UNIVERSAL WASTE, INCLUDING POSSIBLE PCB BALLASTS IN (4) LIGHT FIXTURES, (8) MERCURY BULBS, MERCURY THERMOSTAT AND SMOKE ALARM	LUMP SUM	N/A	N/A			
STRUC	TURAL			1	1		
3	CASTE-IN-PLACE CONCRETE	LUMP SUM	N/A	N/A			
4	STEEL FRAMING	LUMP SUM	N/A	N/A			
5	METAL DECK	LUMP SUM	N/A	N/A			
6	METAL STAIR AND RAILINGS	LUMP SUM	N/A	N/A			
7	OTHER-S Please list items included in 'OTHER'.	LUMP SUM	N/A	N/A			
ARCHIT	ECTURAL						
8	THERMAL & MOISTURE PROTECTION	LUMP SUM	N/A	N/A			
9	OPENINGS (DOORS, WINDOWS, FRAMES, AND HARDWARE)	LUMP SUM	N/A	N/A			
10	PAINT AND MISC. FINISHES	LUMP SUM	N/A	N/A			
11	OTHER-A Please list items included in 'OTHER'.	LUMP SUM	N/A	N/A			
MECHA	NICAL				-		
12	DEMOLITION OF EXISTING HVAC SYSTEM	LUMP SUM	N/A	N/A			
13	CONSTRUCTION OF NEW HVAC SYSTEM	LUMP SUM	N/A	N/A			
14	OTHER-M Please list items included in 'OTHER'.	LUMP SUM	N/A	N/A			
ELECTR	ICAL						
15	TEMPORARY 120/208V OUTDOOR RATE ELECTRICAL DISTRIBUTION	LUMP SUM	N/A	N/A			

ITEM NO.		QUANTITY	MATERIAL UNIT PRICE	LABOR UNIT PRICE	MATERIAL LUMP SUM	LABOR LUMP SUM	SUB TOTAL
ELECTR	RICAL (CONT.)						
16	DEMOLITION OF EXISTING ELECTRICAL SYSTEM	LUMP SUM	N/A	N/A			
17	POWER EQUIPMENT (SWITCHBOARD, SWITCHES, PANELBOARDS, ETC.)	LUMP SUM	N/A	N/A			
18	CONDUIT	LUMP SUM	N/A	N/A			
19	LOW VOLTAGE CABLE	LUMP SUM	N/A	N/A			
20	GROUNDING SYSTEM	LUMP SUM	N/A	N/A			
21	OTHER-E Please list items included in 'OTHER'.	LUMP SUM	N/A	N/A			
		in specification 014500					
		General Conditions: \$				\$ -	
						Permitting (DOB and EAB): and Performance Bonding:	
		Insurance: \$					
		Overhead & Profit: \$					\$-
** <u>Allo</u> v	<u>wance</u> : Work for unforeseen existing conditions, including but not limited to unidentified conduits, cables, temporary feeders, etc.					\$	
В		BUILDING 275 TOTAL BID AMOUNT BID ITEMS NOS. 1 THRU 21)MUST BE WRITTEN IN WORDS:					
Ν	Y	DOLLARS CENTS					

Building 77 141 Flushing Ave, Suite 801 Brooklyn, NY 11205

EXHIBIT B FORM OF BID BOND

KNOW THESE PRESENTS, that we, the undersigned, ALL MEN BY _____ as Principal, (hereinafter called _____a corporation duly " Principal) " and __ organized under the laws of the State of ______ as Surety, (hereinafter called " Surety ") are hereby held and firmly bound unto the Brooklyn Navy Yard Development Corporation, the City of New York, and the City of New York Department of Small Business Services or their successors and assigns collectively, as Obligee (hereinafter called ("Obligee") in the full and just sum of ______ Dollars (\$_____) (hereinafter called "Penal Sum"), to the payment of which, well and truly to be made, the Principal and Surety hereby bind themselves, their heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents:

Signed and sealed with our seals and dated this _____ day of _____, 20___.

WHEREAS, the Principal has submitted a bid to Obligee based on:

- 1. Obligee's Request for Bids; and
- 2. Obligee's Information for Bidders; and
- 3. Obligee's Bid submission Documents; and
- 4. The Project Specification Documents issued by Obligee; and
- 5. Any addenda issued by Obligee in connection with the above documents.
- 6. Documents 1 through 5 above are incorporated herein by reference

For_____

Project number _____ (BID)

(Project)



Building 77 141 Flushing Ave, Suite 801 Brooklyn, NY 11205

WHEREAS, the Condition of the above obligation is such that the Principal has submitted to Obligee the id which requires Principal to enter into a written contract for the performance of the Project.

NOW, THEREFORE,

- A. If the BID is rejected, or
- B. If the BID is accepted and the Principal and Obligee have executed and delivered the required contract in the form set forth in the Information for Bidders, in accordance with the accepted BID (Contract); and
- C. If the Principal furnishes Obligee with the required bond for Principal's faithful performance the Contract; and
- D. If the Principal furnishes Obligee with the required bond for the payment of all persons performing labor or furnishing materials in connection with the Contract; and
- E. If the Principal shall in all other respects perform the agreements created by Obligee's acceptance of the Bid
- F. If the Principal shall pay to the Obligee an amount equaling the difference, not to exceed the Penal Sum hereof, between the amount specified in said BID and such larger amount for which the Obligee may in good faith contract with another party to undertake the Project covered by said Bid.

Then this obligation shall be null and void, otherwise to remain in full force and effect.

It is understood and agreed that the liability of the Surety for any and all claims hereunder shall in no event exceed the Penal Sum as shown herein.

The Surety, for value received, hereby stipulates and agrees that the obligations of said Surety under this Bond shall be in no way impaired or affected by any extension of the time within which the Obligee may accept the Bid; and said Surety does hereby waive notice of any such extension.

(Principal)

{SEAL}

By: ______ Title: Address _____

(Surety)

{SEAL}

Building 77 141 Flushing Ave, Suite 801 Brooklyn, NY 11205

By: ______ (Attorney-In-Fact) Address _____

IMPORTANT

- A. Surety companies executing this bond must be certified and appear on the United States Treasury Department's most recent Circular 570 as amended.
- B. Surety companies can execute this bond only in the amount certified on the United States Treasury Department's most recent Circular 570 as amended. Sureties executing this bond must be licensed as a surety by the State of New York.

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EXHIBIT C

EXPERIENCE QUESTIONNAIRE

As used in the questions below the words "YOU" or "YOUR" means, the bidding individual or bidding entity and each and every one of such bidding entity's officers, directors, partners, members or principals (any shareholder owning 10% or more of the company stock is deemed a principal).

Date:	
Bidder's Name:	
Bidder's Office Address:	
Bidder's Telephone Number	
Bidder's Federal Taxpayer Id	entification Number:
Bidder is a(n): Individual 🗖	Partnership □ Corporation □ LLC □ (Check one, whichever applies)
A. What type of construction	work are YOU primarily engaged in?
B. You have been engaged ir and/or b) as a Subcontractor	n such construction work for a) as a Prime Contractor?years
C. Have YOU or any organiza complete a Contract awarde	tion YOU have been affiliated with in any capacity ever failed to d to YOU? Yes □ No □
If Yes, for whom, where, whe	en and why?

D. Have YOU or any organization YOU have been affiliated with in any capacity ever been declared in default by any City, State or Federal Agency or on any Contract?



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Yes 🗆 No 🗖

If Yes where, when, by whom and why? _____

E. Have YOU or any organization YOU have been affiliated with in any capacity ever been investigated by any City, State or Federal Agency? Yes \Box No \Box

If Yes where, when, by whom and why? ______

F. Have YOU or any organization YOU have been affiliated with in any capacity ever when called before a GRAND JURY to testify, refused to sign a WAIVER OF IMMUNITY or answer any relevant questions or have been indicted for any reason whatsoever? Yes \Box No \Box

If Yes where, when and why? _____

G. List the names of all organization YOU have been affiliated with in any capacity that are <u>not</u> listed in paragraphs D. E. or F. above.

H. Have YOU ever appeared before the Board of Responsibility of the City of New York? Yes \Box No \Box



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If Yes when and why ______

I. In what other businesses do YOU have a financial interest?

REFERENCES

List all corporations and individuals for whom YOU have performed significant work for and an official from whom BNYDC can obtain a reference. YOU must include a current address and telephone number for each reference.

List all cities for which YOU have performed significant work for and an official from whom BNYDC can obtain a reference. YOU must include a current address and telephone number for each reference.



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List all counties for whom YOU have performed significant work for and an official from which BNYDC can obtain a reference. YOU must include a current address and telephone number for each reference.

List all States have YOU performed work and an official from whom BNYDC can obtain a reference. YOU must include a current address and telephone number for each reference.

List all Federal construction projects YOU have performed work on and an official from whom BNYDC can obtain a reference. YOU must include a current address and telephone number for each reference.



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Have YOU filed Performance Record reports with the Bureau of Contract Information, Inc., Washington, D.C.? Yes \Box No $\Box \Box$ if Yes list Date(s) _____

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PROJECT EXPERIENCE FORMS AND RESUMES

Individual Construction Experience

For each key individual in your organization please attach a resume providing at a minimum the following information: Name

Education Professional designations

Professional affiliations

Awards

Relevant experience including size of previous projects, cost of such project, location of such projects, a description of such projects and the key individuals position for each project

<u>Special Experience Requirements</u>: for each Special Requirement set forth in the Information For Bidders:

- A. If bidder intends to perform the specific areas of work with its own forces, Bidder must provide Resumes for Key personnel and Project Experience Forms that demonstrates Bidders ability to fulfill the Special Requirements.
- B. If bidder intends to subcontract the specific areas of work, the proposed subcontractor(s) must provide Resumes for Key personnel and Project Experience Forms that demonstrates subcontractor(s) ability to fulfill the Special Requirements.

I (We) have read and understood all the questions in the foregoing Experience Questionnaire and that I (We) have supplied true, full and complete information and answers I (We) understand that BNYDC will rely on the information contained herein.

Bidder	
Name:	
Ву:	(Signature of Individual, Partner, Member or Corporate Officer)
Title: _	······
Addres	ss:
Attest	(Corporate or LLC Seal) : Secretary of Corporate or LLC Bidder



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ACKNOWLEDGMENT, IF AN INDIVIDUAL

STATE OF NEW YORK)

SS.: COUNTY OF

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 described in and who executed the foregoing instrument and that the several matters therein stated are in all respects true.

Notary Public

ACKNOWLEDGMENT, IF A PARTNERSHIP

Notary Public



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ACKNOWLEDGMENT, IF A LIMITED LIABILITY COMPANY

STATE OF NEW YORK)

: ss.: COUNTY OF _____)

On the _____ day of ______ in the year 20___, before me personally came ______, to me known, who, being by me duly sworn, did depose and say that that he/she is a member of ______ the limited liability company described in and which executed the foregoing instrument; and that he/she signed his/her name thereto by authority of the members of said limited liability company and that the several matters therein stated are in all respects true.

Notary Public

ACKNOWLEDGMENT, IF A CORPORATION

STATE OF NEW YORK)

: ss.: COUNTY OF _____)

On the ____ day of _____ in the year 20__, before me personally came _____, to me known, who, being by me duly sworn, did depose and say that that he/she is the _____ of _____ the business described in and which executed the foregoing instrument; and that he/she signed his /her name thereto by authority of the Board of Directors of said corporation and that the several matters therein stated are in all respects true.

Notary Public



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PROJECT EXPERIENCE FORM (To be completed for each of three projects)

Name of Project:
Location of Project:
Owner or Owner's representative familiar with the work performed:
Name:
Title:
Phone number:
Brief description of work completed:
Was the work was performed as a prime subcontractor, or joint venture:
Dollar amount of Contract or subcontract: \$
Date Started:
Original Scheduled Completion Date:
Actual Completion Date:
If Not Completed By Original Scheduled Date, Give Reasons Therefore:



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PROJECT EXPERIENCE FORM (To be completed for each of three projects)

Name of Project:
Location of Project:
Owner or Owner's representative familiar with the work performed:
Name:
Title:
Phone number:
Brief description of work completed:
Was the work was performed as a prime subcontractor, or joint venture:
Dollar amount of Contract or subcontract: \$
Date Started:
Original Scheduled Completion Date:
Actual Completion Date:
If Not Completed By Original Scheduled Date, Give Reasons Therefore:



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PROJECT EXPERIENCE FORM (To be completed for each of three projects) Name of Project:
Location of Project:
Owner or Owner's representative familiar with the work performed:
Name:
Title:
Phone number:
Brief description of work completed:
Was the work was performed as a prime subcontractor, or joint venture:
Dollar amount of Contract or subcontract: \$
Date Started:
Original Scheduled Completion Date:
Actual Completion Date:

If Not Completed By Original Scheduled Date, Give Reasons Therefore:

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<u>EXHIBIT D</u>

DECLARATION OF UNDERSTANDING

DECLARATION OF UNDERSTANDING

By signing in the space provided below, the undersigned certifies that the Bidder (i) has read and understands the scope and requirements of this Project, as described in the IFB and all attachments; (ii) has the capacity to execute this Project, (iii) agrees to accept payment in accordance with the requirements of this IFB and the standard Contract, attached hereto as <u>Exhibit H</u>, and (iv) will, if its Bid is accepted, enter into the attached Contract with the Brooklyn Navy Yard Development Corporation.

The undersigned further stipulates that the information in his/her Bid is, to the best of his/her knowledge, true and accurate.

Authorized Signature, Title		Date
Consultant Firm		
Business Address		
City	State	Zip
Telephone Number	Fax Number	
Federal Tax Identification Number		
[] Corporation[] Partnership[] Individual[] Other (State)		

(Seal, if a Corporation)

B | N | Y

Brooklyn Navy Yard Development Corporation BrooklynNavyYard.org Building 77 141 Flushing Ave, Suite 801 Brooklyn, NY 11205

<u>EXHIBIT E</u>

CONFIRMATION OF PASSPORT COMPLIANCE

CONFIRMATION OF PASSPORT COMPLIANCE

The Bidder shall submit this Confirmation of PASSPort Compliance, which replaces VENDEX and shall include its PASSPort identification number. All VENDEX processes are now completed in the PASSPort Portal, this replaces the paper forms. Please register and complete new questionnaires as soon as possible. PASSPort will not be importing any information from VENDEX. The main purpose of PASSPort is to be a completely paperless interactive system.

Please access to the NYC.gov PASSPort website thru the link below: https://www.nyc.gov/site/mocs/passport/about-passport.page

[to attach PASSPort Confirmation Form]

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CONFIRMATION OF PASSPORT COMPLIANCE

The Proposer shall submit this Confirmation of PASSPort Compliance
Name of Proposer: ______
Proposer's Federal Tax ID: ______
Proposer's Address: ______
Proposer's Telephone Number: ______
Proposer's Fax Number: ______
Date of Proposal Submission: ______
Project ID: ______

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

(1) **Submission of Questionnaires**: By signing in the space provided below, the Proposer certifies that as of the date specified below, the Proposer has submitted PASSPort Questionnaires to the PASSPort website thru the link below: <u>https://www.nyc.gov/site/mocs/passport/about-passport.page</u>

Date of Submission:

By:____

(Signature of Partner or corporate officer)

Print Name:

(2) **Submission of Certification of No Change:** By signing in the space provided below, the Proposer certifies that they have read and follow the instructions on the PASSPort website.

By:____

(Signature of Partner or corporate officer)

Print Name:



Building 77 141 Flushing Ave, Suite 801 Brooklyn, NY 11205

EXHIBIT F DOING BUSINESS DATA FORM

[to attach]

Mayor's Office of Contract Services Doing Business Accountability Project	To be completed by the City agency prior to distribution Agency: Transaction ID:				
	Check One:	Transaction Type (check one):			
Doing Business Data Form	F Proposal	Concession	Contract	Economic Development Agreement	
	Award	Franchise	Grant	Pension Investment Contract	

Any entity receiving, applying for or proposing on an award or agreement must complete a Doing Business Data Form (see Q&A sheet for more information). Please either type responses directly into this fillable form or print answers by hand in black ink, and be sure to fill out the certification box on the last page. Submission of a complete and accurate form is required for a proposal to be considered responsive or for any entity to receive an award or enter into an agreement.

This Data Form requires information to be provided on principal officers, owners and senior managers. The name, employer and title of each person identified on the Data Form will be included in a public database of people who do business with the City of New York; no other information reported on this form will be disclosed to the public. This Data Form is not related to the City's VENDEX requirements.

Please return the completed Data Form to the City office that supplied it. Please contact the Doing Business Accountability Project at <u>DoingBusiness@cityhall.nyc.gov</u> or 212-788-8104 with any questions regarding this Data Form. Thank you for your cooperation.

Section 1: Entity Information

Entity Name:							
Entity EIN/TI	N:		<u>.</u>				
Entity Filing	Status (selec	ct one):					
Entity has	never complet	ed a Doing Bu	siness Data	a Form. <i>Fill o</i>	out the entire for	m.	
Change from previous Data Form dated Fill out only those sections that have changed,							
and indica	ate the name o	of the persons	who no long	ger hold pos	itions with the e	antity.	
No Change	e from previous	s Data Form da	ated	Si	kip to the bottor	m of the last page.	
Entity is a No	n-Profit:	T Yes	∏ No				
Entity Type:	☐ Corporati ☐ Sole Prop	on (any type) prietor	☐ Joint \ ☐ Other			☐ Partnership (any type)	
Address:							
City:				State:	Zip	:	
Phone :				Fax :			
E-mail:							
	Provide	your e-mail addres	ss and/or fax r	number in orde	r to receive notices	s regarding this form by e-mail or fa	ax.

Doing Business Data Form	EIN/TIN:	Page 2 of 4
Section 2: Principal Officers		
officer or its equivalent, please check the person listed is replacing someon	n information for each officer listed below ("This position does not exist." If the entit ne who was previously disclosed, please of ng replaced so his/her name can be remo the change became effective.	ty is filing a Change Form and check "This person replaced"
Chief Executive Officer (CEO) of	or equivalent officer	This position does not exist
Chairperson of the Board.	er, such as the President, Executive Direc	
Employer (if not employed by entity):		
	Home Phone #:	
_):	
Chief Financial Officer (CFO) or	equivalent officer	This position does not exist
	such as the Treasurer, Comptroller, Finan	
	MI: Last:	
	Home Phone #:	
	:	on date:
Chief Operating Officer (COO) o	r equivalent officer	This position does not exist
	er, such as the Chief Planning Officer, Dire	
First Name:	MI: Last:	
Office Title:		
Employer (if not employed by entity):		
	Home Phone #:	
Home Address:		
\square This person replaced former COO	:	on date:

For information or assistance, call the Doing Business Accountability Project at 212-788-8104.

Section 3: Principal Owners

Please fill in the required identification information for all individuals who, through stock shares, partnership agreements or other means, **own or control 10% or more of the entity**. If no individual owners exist, please check the appropriate box to indicate why and skip to the next page. If the entity is owned by other companies, those companies do **not** need to be listed. If an owner was identified on the previous page, fill in his/her name and write "See above." If the entity is filing a Change Form, list any individuals who are no longer owners at the bottom of this page. If more space is needed, attach additional pages labeled "Additional Owners."

There are no owners listed because (select one):

The entity is not-for-profit	There are no individual owr	No individual owner holds 10% or more shares in the entity
Other (explain):		

Principal Owners (who own or control 10% or more of the entity):

First Name:	MI:	Last:	
Office Title:			
Employer (if not employed by entity):			
Birth Date (mm/dd/yy):			
Home Address:			
First Name:	MI:	Last:	
Office Title:			
Employer (if not employed by entity):			-
Birth Date (mm/dd/yy):	_ Home Pho	one #:	
Home Address:			
First Name:	MI:	Last:	
Office Title:			
Employer (if not employed by entity):			
Birth Date (mm/dd/yy):	_ Home Pho	one #:	
Home Address:			
Remove the following previously-reported Prin	ncipal Owne	rs:	
Name:			Removal Date:
Name:			Removal Date:

Name: _____ Removal Date:

Doing Business Data Form	EIN/TIN:	Page 4 of 4

Section 4: Senior Managers

Please fill in the required identification information for all senior managers who oversee any of the entity's relevant transactions with the City (e.g., contract managers if this form is for a contract award/proposal, grant managers if for a grant, etc.). Senior managers include anyone who, either by title or duties, has substantial discretion and high-level oversight regarding the solicitation, letting or administration of any transaction with the City. **At least one senior manager must be listed, or the Data Form will be considered incomplete.** If a senior manager has been identified on a previous page, fill in his/her name and write "See above." If the entity is filing a Change Form, list individuals who are no longer senior managers at the bottom of this section. If more space is needed, attach additional pages labeled "Additional Senior Managers."

Senior Managers:

First Name:	MI:	Last:	
Office Title:			
Employer (if not employed by entity):			
Birth Date (mm/dd/yy):			
Home Address:			
First Name:	_ MI:	Last:	
Office Title:			
Employer (if not employed by entity):			
Birth Date (mm/dd/yy):			
Home Address:			
First Name:	_ MI:	Last:	
Office Title:			
Employer (if not employed by entity):			
Birth Date (mm/dd/yy):			
Home Address:			
Remove the following previously-reported Ser	-		
Name:			Removal Date:
Name:			Removal Date:
C	Certificatio	n	
I certify that the information submitted on these complete. I understand that willful or frauduler in the entity being found non-responsible and t Name:	nt submissi	on of a mat	terially false statement may result
	Det		
Signature: Entity Name:		5	
Title:		Phone #:	
Please return this form to the City agency that sup	plied it to you,	not to the Do	ing Business Accountability Project.

For information or assistance, call the Doing Business Accountability Project at 212-788-8104.

Printed on paper containing 30% post-consumer material



Building 77 141 Flushing Ave, Suite 801 Brooklyn, NY 11205

EXHIBIT G M/WBE INFORMATION FORM

[to attach]

Building 77 141 Flushing Avenue, Suite 801 Brooklyn, NY 11205

Dear Vendor:

The Brooklyn Navy Yard Development Corporation is compiling statistical data on companies that provide construction, professional services, standard services, and goods to our company so that we can comply with the New York City Local Law (LL 129). Please complete the attached information sheet and return it alongside your vendor information forms.

If you are a minority or woman-owned business enterprise (M/WBE) but are not yet certified by the City of New York we strongly urge you to do so. The city has an aggressive program to help certified M/WBEs and it is in your best interest to get certified. For more information on getting certified, we suggest that you call the New York City Department of Small Business Services' Certification Hotline at (212) 513-6311. Addition information can also be obtained through the City's website at: www.nyc.gov/getcertified.

We sincerely appreciate your cooperation.

Sincerely,

Brian Linett Sr. Vice President & Controller

B	
N	Y

Building 77 141 Flushing Avenue, Suite 801 Brooklyn, NY 11205

Vendor Information Form				
Name:		Co	mpany Title:	
Company Name:				
Company Address:				
Federal Tax ID / SSN:				
Email:		Tel	ephone:	
Business type: Select One				
□Individual/Sole Proprietor □Corporation			□Partnership □Other	
Business category: Select One				
□Construction □Professional Services □Standard Services □Other			□Construction Subcontract □Professional Services Subcontract □Goods	
Business Demographics				
	at identifies as A		e (M/WBE) is a business owned (51% or , Asian-Pacific, Black, Hispanic, Native	
Majority owner M/WBE?	□Yes	□No		
Majority owner female?	□Yes	□No		

Designated MBE Group (select one - if N/A, please leave blank):

□Asian - Indian □Asian - Pacific □Black □Hispanic □Native American

City or state certification (select all that apply):

Minority and Women-owned Business Enterprise (M/WBE)
 Locally Based Enterprise (LBE)
 Emerging Business Enterprise (EBE)
 Service-Disabled Veteran-Owned Small Business (SDVOB)

Certification Number:



Building 77 141 Flushing Ave, Suite 801 Brooklyn, NY 11205

EXHIBIT H FORM OF CONTRACT

[to attach]

CONSTRUCTION CONTRACT NUMBER [__] (hereinafter referred to as the "Contract") dated as of [_____], between **BROOKLYN NAVY YARD DEVELOPMENT CORPORATION**, having an office at Building 77, 141 Flushing Avenue, Suite 801, Brooklyn, New York 11205 (hereinafter referred to as "BNYDC"); and [____], having its principal place of business at [____] (hereinafter referred to as the "Contractor") for [____] (hereinafter referred to as "Project") at Building [___] (hereinafter referred to as "Project Site(s)") which Project Site(s) is located within the Brooklyn Navy Yard (the "Premises"). The Work as defined in Section 1.2 hereof shall commence upon BNYDC's issuance to Contractor of a Notice to Proceed, setting the Commencement Date. This Contract shall have a term of [___] consecutive calendar days, measured starting from the Commencement Date, unless extended in writing by both parties (hereinafter referred to as the "Term"). . Substantial Completion of the Work, as defined in Section 8.2 of this Contract, shall be completed by the date that is [___] calendar days from the Commencement Date (the "Substantial Completion Deadline") and Final Completion of the Work, as defined in Section 8.4 of this Contract, shall be completed by the date that is [___] calendar days from the Commencement Date (the "Final Completion Deadline"). Such Work shall be performed for the total amount of [____] and [_]/100 Dollars (\$[___]) (hereinafter referred to as the "Contract Price"). A breakdown of the Contract Price is attached hereto as Exhibit "Q".

In consideration of the IFB, the BSD the RFB, Contract Price, and the mutual covenants contained herein and other valuable consideration, the parties agree as follows:

ARTICLE 1

GENERAL PROVISIONS AND DEFINITIONS

Section 1.1 <u>Contract</u> This Contract is composed of the following items:

A. Articles 1-17 of this Contract and all Exhibits annexed hereto;

B. All Change Orders as defined in Section 1.2.5 hereof and, all amendments and addenda to this Contract;

C. The Information For Bidders (hereinafter referred to as the "IFB"), Bid Submission Documents, (hereinafter referred to as the "BSD") and Request For Bids (hereinafter referred to as the "RFB") issued by BNYDC, together with all addenda to the IFB, BSD, or RFB.

D. All provisions of laws, rules, regulations and Executive Orders of the United States Government, the State of New York, the City of New York, or any agency or subdivision thereof, which are required to be a part of or apply to this Contract, whether or not any specific reference is made to the same in this Contract.

E. All required bid, payment and performance bonds.

<u>Section 1.2 Definitions</u> The following words shall, whenever they appear in this Contract, have the meanings set for them in this section, unless a different meaning is clear from the context:

- A. "Architect/Engineer" shall mean the entity or entities retained by BNYDC to perform design services for the Project.
- B. "BSD" shall mean the Bid Submission Documents as promulgated by BNYDC upon which Contractor presented its bid in response to the RFB and upon which the Contract Price is based.
- C. "BNYDC's Contractors" shall mean other Contractors or construction managers engaged by BNYDC to perform work on the Project or at the Project Site(s).
- D. "Change Orders" shall mean changed, deleted and/or additional Work to be performed by the Contractor pursuant to Article 6 hereof.
- E. The "City" shall mean the City of New York.
- F. The "City Contract" shall mean the management contract between the City of New York and the Brooklyn Navy Yard Development Corp.
- G. "Construction Documents" shall mean the drawings identified on **Exhibit "C"** and the specifications annexed as **Exhibit "D"**.
- H. "Contract Price" shall mean the total compensation for the Work as set forth on page 1 hereof.
- I. "DSBS" shall mean the City of New York Department of Small Business Services.

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- J. "Extra Work" shall mean Work by Contactor performed at the request of BNYDC or Work performed by Contactor with BNYDC's. knowledge and approval for which there is no extra charge
- K. "Federal" shall mean the Government of the United States of America.
- L. "IFB" shall mean the Information For Bidders contained in the RFB promulgated by BNYDC upon which Contractor based its bid and upon which the Bid Submission Documents are based.
- M. "Liquidated Damages" shall mean the liquidated damages rate set forth in the IFB multiplied by the number of calendar days that Substantial Completion (as defined in Section 8.2) of the Work is delayed from the Substantial Completion Deadline set forth in the Recitals to this Contract.
- N. "Premises" shall mean the Brooklyn Navy Yard.
- O. "President" shall mean the President of BNYDC, or the President's designee.
- P. "Project" shall mean the services to be performed under this Contract, as defined on page 1 of this Agreement.
- Q. "Protest Work" shall mean Work the Contractor believes is Change Order Work for which no Change Order has been issued.
- R. "Project Site(s)" shall mean the location within the Brooklyn Navy Yard where the Work is to be performed as defined on page 1 hereof.
- S. "RFB" shall mean the Request For Bids which contained the IFB promulgated by BNYDC upon which Contractor presented its bid on the BSD and upon which the Contract and the Contract Price are based.
- T. "Project Engineer" shall mean a BNYDC's representative whose authority is set forth in Article 8.5 hereof.
- U. "State" shall mean the State of New York.

- V. "Subcontractor(s)" shall mean any entity the Contractor enters into a subcontract or material purchase order (hereinafter referred to as "Subcontract(s)") for purpose of performing the Work. All Subcontractor(s) and Subcontract(s) must be approved by BNYDC.
- W. "Tenant", "Subtenant", "Licensee," "Invitee" "Person" or "Visitor" shall mean any person or entity that is on the Premises with or without the permission of BNYDC.
- X. "Work" shall mean all labor, equipment, services, permits, approvals, inspections and material necessary for the complete and satisfactory completion of the Project as set forth in this Contract.

Section 1.3 Funding

- A. Funds for the payment of Contractor under this Contract may be provided by or through the City, pursuant to the City Contract (hereinafter referred to as City Contract Funded). Therefore if the Project is City Contract Funded, Contractor shall take no action which constitutes a breach of the City Contract. Contractor acknowledges that it has carefully reviewed and completely understands the terms and conditions of the City Contract which was available for review during the bidding period. Contractor further understands and agrees that if the City Contract is terminated this Contract may be assigned by BNYDC to the City.
- B. Funds for payment of Contractor under this Contract may also be provided by the United States Federal Emergency Management Agency's Public Assistance funds ("FEMA Funding"). The requirements in connection with FEMA Funding are set forth in Exhibit "O", which is attached hereto and made a part hereof. Failure by the contractor to comply with the requirements set forth in Exhibit "O" shall be a material default under this Contract.

<u>Section 1.4</u> <u>Applicable Laws, Rules and Regulations</u> The Work shall be performed in strict compliance with all applicable federal, state and local laws, rules, regulations, codes and orders. Failure by the Contractor to comply with any such law, rule, regulation code or order shall be a material default under this Contract. Without limiting the generality of the foregoing, the Contractor agrees that it shall specifically comply with the following:

- A. <u>Equal Employment</u> The requirements are set forth in **Exhibit "A**", which is attached hereto and made a part hereof.
- B. <u>Federal Job Training Partnership Act</u> (hereinafter referred to as the <u>"FJTPA"</u>) The FJTPA, which specifies that when hiring for the Work, the Contractor shall give consideration to employing City residents who are economically disadvantaged or are eligible under FJTPA, and who have qualifications and skills commensurate with the requirements for the positions available. To the greatest extent feasible, the Contractor shall give opportunities for training and employment to lower income persons in the area of the Premises.
- C. <u>Minimum Wages; Payroll Reports</u> The provisions of Sections 220 and 230 of the New York State Labor Law shall apply to all Work under this Contract. If no prevailing wage is applicable, then Contractor will pay workers the minimum hourly rate required by law, unless a higher amount is required pursuant to any other provision of this Contract. The Contractor shall furnish on demand by BNYDC or DSBS or such other agency or office as the President may direct, a verified copy of its payroll, and also any other information required by BNYDC to satisfy BNYDC that the provisions of this Section are being observed.
- D. <u>MacBride Principles</u> The requirements are set forth in **Exhibit "B**", which is attached hereto and made a part hereof.
- E. <u>Noise Control</u> The provisions for noise control for the Work at the Project Site(s) and on the Premises are set forth in Section 24-216 of the City's Administrative Code as it may be amended from time to time.
- F. <u>ADA Requirements</u> Title II of the Americans with Disabilities Act, the rules and regulations promulgated thereunder, and any state and local laws establishing construction requirements with respect to access for disabled persons.
- G. <u>Tropical Hardwoods</u> The provisions for the use of Tropical Hardwoods used for the Work at the Project Site(s) and on the Premises are set forth in Section 167-b of the New York State Finance Law, which prohibits the use of tropical hardwoods, except as expressly permitted.
- H. Intentionally Omitted.

- I. <u>Whistleblower Protection</u> The requirements are set forth in **"Exhibit K"**, which is attached hereto and made a part hereof.
- J. <u>Paid Sick Leave</u> The requirements are set forth in **"Exhibit L"**, which is attached hereto and made a part hereof.
- K. <u>OSHA</u> The Contractor shall ensure that the Work is performed in a location and manner free from recognized hazards and shall comply with Occupational Safety and Health Administration ("OSHA") standards, rules and regulations. The Contractor shall regularly examine workplace conditions and use safe and well-maintained tools, equipment and Personal Protective Equipment to ensure conformance with applicable OSHA standards.
- L. [Site Management Plan The Contractor shall perform all Work in compliance of the terms and provisions of that certain Site Management Plan ("SMP") referenced in the Environmental Easement (the "Environmental Easement") between the City, BNYDC and the People of the State of New York dated as of June 26, 2018 and recorded on July 3, 2018, C.R.F.N. 2018000219215. Contractor specifically acknowledges and agrees that any ground disturbance activities at the Project Site (including all digging for construction, utility installations, or otherwise) must be performed in strict accordance with the notice and other provisions the SMP, including but not limited to the Excavation Work Plan attached as Exhibit "M" to this Contract and the Health and Safety Plan attached as **Exhibit "N"** to this Contract, which Plans are attached as appendices to the SMP; (ii) Contractor's failure to strictly comply with the Environmental Easement and the SMP shall be a material default under this Contract and (iii) in addition to all of BNYDC's remedies under this Contract, Contractor shall be responsible for payment of any fines or other consequences related to Contractor's failure to strictly comply with the Environmental Easement and the SMP.]

Contractor agrees to incorporate, each of the provisions contained in Article 1.4 and each of the exhibits referenced therein into each Subcontract so as to bind each Subcontractor to the provision of Article 1.4.

<u>Section 1.5 Intent of Contract</u> The intent of this contract is to complete the Project; therefore matters not expressly included in this Contract but which are reasonably inferable therefrom as being necessary to produce the intended results shall be deemed included as a part of the Work. The Contract parts are

complementary and cumulative and what is called for by one part shall be as binding as if called for by all.

Section 1.6 The Construction Documents The drawings identified in Exhibit "C" which is attached hereto and made a part hereof and the Specifications identified in Exhibit "D" are complementary. Anything shown in any of the drawings and not mentioned in the specifications, or mentioned in any of the specifications and not shown in the drawings, shall have the same effect as if shown or mentioned in both. In the event of a conflict between the drawings and the specifications, Contractor shall do the more complete installation, unless directed, in BNYDC's sole discretion, otherwise in writing.

<u>Section 1.7 Contract Modifications</u> The Contract is to be construed as one coherent overall document. If part of the Contract is Modified for the purpose of varying, modifying, rescinding or adding to the Contract then such modified portions of the Contract must be read together with the unmodified portions of the Contract to which they relate so as to give effect to the provisions of the Contract Documents that remain in full force and effect. Notwithstanding the above, and to the extent BNYDC or Contractor becomes aware of any conflict within any of the Contract, then BNYDC and Contractor shall promptly inform each other of such conflict and BNYDC shall resolve the conflict. BNYDC's decision is final and binding upon Contractor. Contractor performs Work before the conflict is resolved such Work is be done at Contractor's sole risk, cost and expense.

ARTICLE 2

THE PROJECT SITE (S) AND CONTRACTOR'S RESPONSIBILITIES

Section 2.1 <u>Project Site(s)</u> The Premises are the former New York Naval Shipyard, which has been in continuous use for over 200 years. As such, there are buried foundations of demolished buildings, railroad and crane tracks set in massive concrete foundations and concrete decks set on various types of piles; therefore, BNYDC makes no representations whatsoever as to any subsurface condition of the Project Site(s). The Contractor assumes all responsibility and liability for all subsurface conditions at the Project Site(s) that could have been discovered by subsurface examination. The Contract Price contemplates whatever subsurface conditions at the Project Site(s) materially differing from any assumptions made by Contractor

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unless the Contractor having notice of the history of the Premises could not have anticipated such subsurface conditions.

If access to the Project Site(s) or Premises shall be denied to the Contractor at any time by BNYDC or any person(s) not associated with BNYDC or by court action, and such access denial reasonably interferes with Contractor's ability to perform the Work, then the Term set forth on page 1 hereof shall be extended for a period equal to any such period of access denial. Notwithstanding the foregoing, the Contractor shall not be entitled to an extension of time for any access denial attributable to the actions of the Contractor. In no event shall any denial of access to the Project Site(s) be a breach of this Contract and no damages or increased costs shall be recoverable on account of such denial of access.

Section 2.2 Contractor's Responsibilities

A. <u>Adherence to Contract Documents</u> The Contractor shall perform the Work in strict accordance with the Contract.

B. <u>Supervision</u> The Contractor shall use its best skills to properly administer, coordinate, supervise and superintend the Work. The Contractor shall furnish a competent on-site representative to receive notices, orders and instructions. The Contractor shall at BNYDC's request, report at a meeting between BNYDC and the Contractor on the general progress of the Work at the Project Site(s). The Contractor shall attend in person or have a competent and responsible representative attend such progress meetings.

C. <u>Labor</u> The Contractor shall furnish and maintain an adequate staff and work force of skilled, competent, experienced, reliable and honest workers at the Project Site(s) to carry out the Work in an efficient and timely manner until completion of the Work and shall enforce discipline and order among Contractor's and Subcontractor's employees and shall not employ on the Work any unfit person or anyone not properly skilled or trained in the task to which they are assigned.

D. <u>Labor Disputes</u> The Work may not be interrupted by labor disputes. The Contractor shall use such materials, have deliveries made to the Project Site(s), and employ only such Labor as will perform their services in harmony with all other trades performing Work at the Project Site(s), all other BNYDC's Contactors on the Premises, or otherwise. If a labor dispute does occur then the Contractor is responsible for taking all necessary actions to settle such labor dispute. If questions of union

jurisdiction do arise, then the Contractor shall immediately take all necessary action to settle such jurisdictional disputes and shall use such labor as will settle such dispute at no additional cost to BNYDC. The Contractor shall be responsible for any time lost due to such dispute. If Contractor cannot settle the Labor disputes expeditiously, BNYDC shall after three (3) days written notice to Contractor have the right to terminate the Contractor pursuant to Article 9.2 of this Contract. BNYDC shall then have the right to enter upon the Project Site(s) and take possession thereof for the purpose of completing the Work.

E. <u>Layout of Work</u> All layout shall be performed by the Contractor, who shall be solely responsible for establishing and maintaining the layout, line and grade tolerances required for its the Work. The Contractor shall verify all established baselines prior to use and shall notify BNYDC of any discrepancies.

F. <u>Cleaning and Rubbish Removal</u> Contractor shall clear all debris and rubbish created by its operations on a daily basis. The debris and rubbish shall be collected and deposited in containers provided by Contractor. If the Contractor fails to clear and collect the debris and rubbish then, BNYDC may do so for the account of the Contractor. Such debris and rubbish removal costs shall be deducted from the Contract Price unless sooner paid by Contractor to BNYDC.

<u>Section 2.3</u> Safety The Contractor shall be solely responsible for:

- A. Construction means, methods and techniques; and
- B. Employing methods of construction, materials, scaffolding, tools, structures and equipment which meet or exceed federal, state and local safety and health related rules and regulations, laws and codes; and
- C. Complying with the requirements of all insurance carriers providing insurance coverage for the work.

The Contractor shall coordinate with BNYDC and all BNYDC's Contactors on the Project Site(s) to ensure that the Project Site(s) complies with all safety regulations promulgated by any governmental agency having jurisdiction over the Project Site(s) or the Work. The Contractor shall cooperate fully with BNYDC and other persons, to prevent loss and accidents with respect to the Work on or at the Project Site(s).

ARTICLE 3

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TIME OF PERFORMANCE

<u>Section 3.1</u> Commencement and Coordination of Work Contractor shall commence the Work at the Project Site(s) on the date specified on page 1 of this Contract. Contractor is completely responsible for the coordination of the Work. BNYDC Contractors or third-party Contractors may from time to time work at, on or about the Project Site(s). Contractor agrees to coordinate the Work scheduling to accommodate the needs of such BNYDC Contractors or third-party Contractors.

Section 3.2 BNYDC's Contractors

A. BNYDC reserves the right to have BNYDC's Contractors or third-party Contractors perform work on the Project or at the Project Site(s). Such BNYDC's Contractors or third-party Contractors may provide additional work beyond the Work covered by this Contract including, but not limited to, tenant improvements. Contractor shall, without further compensation, coordinate the Work with the work of BNYDC's Contractors or third-party Contractors. Contractor shall provide BNYDC's Contractors or third-party Contractors access to the Project Site(s) as often and for as long as BNYDC's Contractors or thirdparty Contractors may request. Contractor shall furnish to BNYDC Contractors or third-party Contractors any services that Contractor utilizes or furnishes to its Subcontractors including, but not limited to, use of hoisting facilities and temporary utilities.

B. Contractor shall integrate the schedule of BNYDC's Contractors or thirdparty Contractors into the Progress Schedule, as defined in Article 3.3.

C. Contractor shall permit BNYDC, BNYDC Contractors and third-party Contractors to install equipment of furnishings in the Project, provided that such installation shall not materially interfere with Contractor's performance of its obligations hereunder.

D. If Contractor causes damage to the property of BNYDC, BNYDC's Contractors or third-party Contractors or to any other work or property on the Project Site(s) or Premises, then Contractor shall promptly pay for such damage. Such payment for damages shall be deducted from the Contract Price unless sooner paid by Contractor to BNYDC.

E. BNYDC's Contractors and third-party Contractors may be required to do work before, or simultaneously with the Work. Contractor agrees that, when

requested by BNYDC's Contractor shall stop or suspend the Work to allow BNYDC's Contractors and third-party Contractors to complete their work. When BNYDC makes a request for Contractor to stop, interrupt or suspend Work to the extent that there are delays in the performance of the Work, the period of time during which the Work shall have ceased shall be recognized as a Contemplated Delay.

Section 3.3 Schedules Ten days after the issuance of this Contract, Contractor shall submit to BNYDC in writing, on a form provided by or otherwise acceptable to BNYDC, a schedule of all items of Work to be performed showing the relative dollar value of each item, the date when each item of Work is to be commenced, the duration of each item of Work and the date when each item of Work is to be completed (hereinafter referred to as "Progress Schedule"). As required by section 3.2 b) above, the Progress Schedule shall show the interrelationship of each construction activity of the Contractor under this Contract and all other contracts affecting the Work. BNYDC must approve the Progress Schedule before Work commences. BNYDC will promptly review the submitted Progress Schedule and notify the Contractor to change those items that BNYDC deems incomplete, inaccurate or untimely. Upon receipt of such notification by BNYDC Contractor will incorporate the required changes and submit a revised Progress Schedule. Upon final approval by BNYDC of the Progress Schedule, Contractor shall strictly adhere to the approved Progress Schedule.

It is a condition precedent that an approved Progress Schedule is on file with BNYDC before payment of any kind will be made to the Contractor.

<u>Section 3.4 Time for Completion</u> Time is of the essence in this Contract. All Work must be completed within the number of calendar days set forth on page 1 hereof, from the date specified on page 1 hereof, subject to the provisions of Article 3.7 below.

<u>Section 3.5 Contemplated Delays</u> BNYDC and Contractor acknowledge that they are aware that delays are common to construction projects (hereinafter referred to as "Contemplated Delays").

The Following circumstances shall be deemed Contemplated Delays:

A. Errors in the Construction Documents, or discrepancies in the Construction Documents, or Changes to the Construction Documents, or incomplete Construction Documents that necessitate the issuance of corrective Change Orders.

B. Slow processing of shop drawings.

C. Interference from BNYDC Contractors or third-party Contractors or visitors to the Project Site(s) as contemplated by this Article 3.

D. Adverse weather conditions

- E. Delays, disruptions, hindrances, interferences, or acceleration caused by:
 - Acts, failures to act, errors or omissions of BNYDC, the Architect/Engineer or other BNYDC consultants (hereinafter referred to as "Consultants") in the performance of their respective obligations on the Project, or their failure to give approvals and/or consents within the time periods set forth in the Progress Schedule that result in delays.
 - ii. Economic, industry-wide strikes; fire; acts of God.
- iii. Acts of the public enemy.
- iv. Unavailability of, or inability to obtain, labor or materials by reason of the acts of any governmental body which affect the supply or availability of labor or materials.
- v. Floods.
- vi. Rebellions, riots, insurrections or sabotage.
- vii. Suspension, resequencing, stoppage or interruption of the Work ordered by BNYDC under this Agreement.
- viii. Interruption or failure of utilities, including without limitation, electric, gas, heat, steam and water.

Section 3.6 Assumption of the Risk for Delays

Notwithstanding any other provisions of this Contract, and for the benefit of BNYDC, Architect/Engineer and the Consultants, Contractor agrees to make no claim against BNYDC, the Architect/Engineer, or the Consultants due to any Contemplated Delays or other delays even if Contractor complies with the provisions of Article 3.7, and Contractor is granted an extension of the Term. Contractor agrees to assume the risk of any and all loss and expense for such other delays in the performance of the Work or any other obligation of Contractor under this Contract.

The intent of this Article 3.6 is to avoid protracted costly litigation as to whether delays, should they occur, were anticipated or unanticipated, foreseeable or

unforeseeable, reasonable or unreasonable or as to whether or not they were the fault of BNYDC, Architect/Engineer, Consultants or their representatives. Contractor agrees that all delays, regardless of duration the Contractor assumes any and all loss and expense for such delays in the performance of the Work or any other obligation of Contractor under this Contract.

Contractor certifies that it has considered, as an experienced Contractor, the risk of encountering such delays and its assumption of any and all loss and expense for such delays in the performance of the Work in reaching the Contract Price contained in this Contract.

<u>Section 3.7 Extension of Time for Performance</u>. If performance by the Contractor is a Contemplated Delay, Contractor may be allowed a reasonable extension of the Term to complete the Work. Only the President, upon written application by the Contractor, may grant an extension of time.

Section 3.8 Grounds for Extension If the Contractor has otherwise strictly complied with all of the requirements of this Contract and if Contractor applies, in accordance with Section 3.9 hereof, for an extension of time to complete the Work due to a Contemplated Delay, then Contractor shall be entitled to an extension of the Term to complete the Work. The President shall determine how many days of extension time to grant, but in no event more than the number of days missed due to the contemplated delay.

The Contractor shall not receive separate extensions of time for each of several causes of delay operating concurrently. If one of several causes of delay operating concurrently results from any act, fault or omission of the Contractor or of its Subcontractors or material suppliers, 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.

Section 3.9 Applications for Extension of Time to Complete Work. Contractor must within five (5) days after commencement of the Contemplated Delay, submit a written application to the President containing the following:

- A. Contract identification
- B. The nature of each alleged cause of delay in completing the Work
- C. The number of days attributable to each such cause
- D. The date that each such alleged cause of delay began

- E. The anticipated end date of each alleged cause of delay
- F. Original bid amount contained in the BSD
- G. Contract start date
- H. Original completion date
- I. All previous time extensions granted
- J. The extension of time currently requested.

As part of the application for Extension of Time, Contractor must include the following statement: "Contractor understands and agrees that if a time extension is granted it is only for purposes of permitting continuation of Work and that, unless otherwise agreed by BNDYC in its sole discretion, Liquidated Damages will continue to accrue for each day Substantial Completion is delayed past the applicable Substantial Completion Deadline."

<u>Section 3.10 Analyses and Approval of Time Extensions</u> The President shall analyze Contractor's application for extension of time to complete Work and issue a written acceptance or rejection of said application. If the President accepts the application to extend the time for the performance of the Contract then the Term shall be extended the number of days the President specifies.

<u>Section 3.11 Waiver of Claims</u> The Contractor waives all claims for damages, including all costs and increased costs for labor and material, incurred on account of any delay, hindrance or cause whatsoever, and the Contractor agrees that its sole right and remedy for any delay, hindrance or cause shall be that the Contractor shall be entitled to such extension of the Term as the President may grant. Contractor further agrees that such extension of the Term is full and adequate consideration for all delays, hindrances, or causes.

Section 3.12 Liquidated Damages If the Contractor fails to complete the Work by the Substantial Completion Deadline set forth in the Recitals to this Contract, Contractor shall immediately become liable to BNYDC for the specified Liquidated Damages. The Liquidated Damages shall be deducted from the Contract Price unless sooner paid by Contractor to BNYDC. BNYDC and Contractor agreed to the assessment of liquidated damages because each recognizes and acknowledges that the actual damages suffered by BNYDC

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by reason of any delay in the completion of the Work will be of such a nature that they will be unreasonably difficult to determine. BNYDC reserves the right, in accordance with Article 9 hereof, to terminate this Contract and have the Work completed by others at the expense of the Contractor and, in addition, to collect Liquidated Damages.

ARTICLE 4

WORK HOURS

The Contractor shall perform Work only between the hours of 7:30 a.m. and 4:30 p.m., Monday through Friday, except as otherwise specified in the RFB. In an emergency or if the Contractor is required to complete the Work in accordance with the Progress Schedule, Work, with the approval of BNYDC, may be performed at other hours. No extra compensation for any overtime charges or additional expenses resulting from such work shall be paid to Contractor.

ARTICLE 5

PAYMENT; METHOD OF PAYMENT; PAYMENT RECORDS

<u>Section 5.1 Payment</u> BNYDC agrees, upon Final Completion of the Work, to pay the Contractor in full satisfaction for the performance of the Work, and the Contractor agrees to accept, the Contract Price.

<u>Section 5.2 Partial Payment</u> From time to time as the Work progresses, and provided that the Contractor is not in default of this Contract, but not more than once a month, the Contractor shall submit to BNYDC the following required documents (hereinafter referred to as "Required Documents"):

- A. Fully executed and notarized Contractor's Requisition for Progress Payment in the form annexed hereto as **Exhibit** "F"; and
- B. Contractor shall submit for all Work for which Contractor is requesting payment a fully executed and notarized partial release and partial lien waiver, in the form annexed hereto as **Exhibit "I"**; and
- C. Contractor shall submit for each Subcontractor that did Work for which Contractor is requesting payment a fully

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executed and notarized partial release and partial lien waiver, in the form annexed hereto as **Exhibit "I"**.

BNYDC will review the Required Documents and when satisfied that the documents are accurate and complete, promptly pay the Contractor the amount requested, less retainage as follows: until the Work is substantially complete, 5% of the amount requested.

If BNYDC is not satisfied with the accuracy or completeness of the Required Documents, BNYDC will return the Required Documents to Contractor together with a statement setting forth the items of inaccuracy or incompleteness. The statement from BNYDC shall be conclusive and binding upon the Contractor as to all the items included therein.

No further progress payments shall be paid to Contractor until Contractor submits and BNYDC accepts the Required Documents.

<u>Section 5.3 Final Requisition</u> On the day that Final Completion of the Work is achieved, Contractor shall submit to BNYDC the following documents (hereinafter referred to as "Final Documents"):

- A. Fully executed and notarized Contractor's Final Requisition for Payment in the form annexed hereto as **Exhibit "F"**; and
- B. Contractor shall submit for all Work for which Contractor is requesting final payment a fully executed and notarized final release and final lien waiver, in the form annexed hereto as **Exhibit "J"**; and

C. Contractor shall submit for each Subcontractor that did Work on the Project a fully executed and notarized final release and final lien waiver, in the form annexed hereto as **Exhibit "J"**.

BNYDC will review the Final Documents and when satisfied that the Final Documents are accurate and complete, promptly pay the Contractor the final payment less 1% of the final Contract Price as retainage for guaranty or warranty to be held by BNYDC for one (1) year, and return to Contractor excess retainage, if any.

If BNYDC is not satisfied with the accuracy or completeness of the Final Documents, BNYDC will return the Final Documents to Contractor together with a statement setting forth the items of inaccuracy or incompleteness.

The statement from BNYDC shall be conclusive and binding upon the Contractor as to all the items included therein.

Final payment shall not be made to Contractor until Contractor submits and BNYDC accepts the Final Documents.

Section 5.4 Withholding of Payment

Anything contained in this Agreement to the contrary notwithstanding, BNYDC, reserves the right to withhold from any payment due Contractor any amount that BNYDC deems sufficient to reimburse BNYDC for its actual expenditures made for the account of Contractor.

The right to withhold money from Contractor includes without limitation, all amount payable hereunder. If in BNYDC's opinion there is an actual or potential breach of this Contract, or an actual or potential default under this Contract by Contractor and the remaining balance payable to Contractor under this Contract would be insufficient to complete the Work. In connection therewith, BNYDC may nullify, in whole or in part, any previously approved but unpaid Partial Payments.

Section 5.5 <u>Stored Materials</u> BNYDC will allow materials or equipment that are not incorporated in the Work but will be installed in the Project and are delivered (hereinafter referred to as "Material") and suitably stored at the Project Site(s) to be included as an item in the Contractor's Requisition for Progress Payment. If approved in advance by BNYDC, BNYDC will allow eighty percent (80%) of the cost of the Material suitably stored at a location other than at the Project Site(s) to be included as an item in the Contractor's Requisition for Progress Payment so long as Contractor submits paid invoices, bills of sale or such other document satisfactory to BNYDC that establish BNYDC's title to such materials or equipment. Contractor must also protect BNYDC's interest in the Material by providing BNYDC acceptable proof that BNYDC's interest in the material is properly insured. Since off site storage of Material is for the convenience of Contractor transportation to the Project Site(s) of the Material shall not be included as an item in the Contractor's Requisition for Progress Payment.

Section 5.6 Progress Payment <u>Any payment to Contractor pursuant to a</u> <u>Contractor's Requisition for Progress Payment shall only be for completed work</u> in accordance with Section 5.2 hereof or stored materials pursuant to Section 5.5 <u>hereof. In no event shall BNYDC make a Progress Payment for a downpayment</u> <u>or deposit for materials or equipment.</u>

Section 5.7 <u>Miscellaneous Payment Provisions</u> Nothing contained in this Article 5 shall relieve the Contractor of its obligation to give notice of claims pursuant to any other provision of this Contract. The acceptance of the final payment by the

Contractor is a specific waiver and release of any claim the Contractor may have against BNYDC on account of or arising out of the Work. The making of the final payment by BNYDC shall not act as an estoppel against BNYDC or prevent BNYDC from enforcing any right under this Contract or any rights that may accrue or have already accrued at law or in equity.

Section 5.7 Joint Payment All payments by BNYDC shall be in the form of one or more separate checks which together total the amount due, made payable, at the option of BNYDC, either: (1) to the Contractor, (2) to the Contractor and one or more of its suppliers or Subcontractors, or (3) directly to its suppliers or Subcontractors. This provision is strictly for the benefit of BNYDC in order that satisfactory morale and relations with Subcontractors or suppliers is maintained and shall not under any circumstances confer any right upon a third party. In the event BNYDC makes a joint payment to the Contractor and one or more of its suppliers or Subcontractors or pays Contractor's suppliers or Subcontractors directly, then the Contractor shall be notified of such payment and such payment shall be reflected in Contractor's next Requisition and applied to the Contract Price.

Section 5.8 Payment Records Contractor agrees that its records pertaining to this Contract, the Project Site(s), the Project, all payments made hereunder, all purchases, and expenses charged hereunder or otherwise expended (hereinafter referred to as "Records") shall be subject to examination, audit and post audit at any time by BNYDC, the Comptroller of the City, the Director of Administrative Services of the City, DSBS, or such other designated official, and/or agent of the City, the State of New York, or the United States Government (hereinafter referred to as "Audit"). The Contractor shall maintain the Records at its business premises for a period of at least six years from the date of final payment. The Contractor shall maintain all Records and additional documents and records required by BNYDC (hereinafter referred to as "Additional Records"). Contract agrees that the maintenance of the Records and Additional Records are a material part of this Contract. Contractor agrees to promptly prepare and furnish to BNYDC such statements, Records, Additional Records, reports, data or information as requested by BNYDC. The Contractor acknowledges that its Subcontractors are subject to the provisions of this Section and will include such terms in all Subcontracts. Contractor undertakes to provide BNYDC such statements, Records, Additional Records, reports, data or information from Subcontractors as requested by BNYDC

If an Audit discloses any discrepancy, then BNYDC and the Contractor and shall immediately address and clear such discrepancies. If determined by

said audit that BNYDC has overpaid Contractor then Contractor shall immediately return such overpayment to BNYDC. Said return of funds shall be in addition to any claim for damages BNYDC may have as against Contractor. If determined by said audit that Contractor has been underpaid by BNYDC then upon a receipt and approval of a fully executed and notarized requisition for payment, BNYDC will pay Contractor the requested amount.

ARTICLE 6

CHANGE ORDERS; PROTEST WORK

<u>Section 6.1 Extra Work</u> BNYDC reserves the right to interpret the Construction Documents and/or to order minor changes in the Work, if those changes do not involve any adjustment in the Contract Price. The Contractor will promptly comply with any such interpretation or order.

<u>Section 6.2 Field Orders</u> In order to resolve conflicts in the Construction Documents, to order minor changes to avoid conflicts between different trades, or for Extra Work Architect/Engineer and BNYDC's Project Engineer shall have the authority to issue written field orders (hereinafter referred to as "Field Orders"). A Field Order is not a Change Order, only the President under Section 6.3 below has the authority to issue a Change Order.

Section 6.3 Change Orders. BNYDC reserves the right to, from time to time during the course of the Work, change, delete or add Work to the Contract, Such deleted or additional work shall hereinafter be referred to as a "Change Order". The President and the Contractor must sign all Change Orders. An oral directive or a writing not signed by the President and the Contractor shall be void ab initio and of no effect. Contractor upon receipt of a valid Change Order shall promptly perform required Work thereunder. The price for the Work required by the Change Order shall be determined as follows:

- A. If Contractor and BNYDC agree upon a lump sum amount that the Contract Price will be amended by such lump sum amount; and/or
- B. If this Contract the RFB, IFB, or the BSD contains unit prices (hereinafter referred to as "Unit Prices"), which are applicable to the type of work involved in the Change Order, then said Unit Prices will be used to set the amount that the Contract Price will be amended.

C. If BNYDC and the Contractor cannot agree upon a Change Order price prior to the performance of the Change Order, and if Unit Prices are not applicable to the Change Order, then the Contractor shall be paid for such Change Order Work an amount equal to either

- 1. With respect to Change Order Work performed by the Contractor the sum of:
 - a. Contractor's actual, documented to BNYDC's satisfaction, incurred costs defined as:

i) Base wages paid to laborers, including all insurance, welfare and other fringe benefits, and payments to labor organizations; and
ii) Cost of materials purchased, plus transportation costs, less all Contractor's discounts; and
iii) The actual cost of additional insurance necessitated by the Change Order Work; and
iv) The cost of installation, maintenance, operation and rental (or rental value of Contractor owned plant and equipment, but not tools) necessitated by the Change Order; and

v) The cost of necessary installation and dismantling of such plant and equipment (including transportation to and from the Project Site) (hereinafter referred to as "Actual Costs"); plus

b. 10% of such Actual Costs as compensation for all other costs, including overhead and small tools (hereinafter referred to as "Additional Costs"); plus

c. An additional 10% of such Actual Costs as compensation for profit (hereinafter referred to as "Profit"); or

2. With respect to Change Order Work performed by a Subcontractor, the sum of:

a. The Subcontractor's Actual Costs; and

b. 10% of Actual Costs as compensation for Subcontractor's Additional Costs,

c. Not more than 5% of Actual Costs for Subcontractor's profit; and

d. Not more than 5% of Subcontractor's Actual Costs for the Contractor's Additional Costs and profit;

e. The total of the markups described in (2) (b), (2) (c) and (2)(d) above shall not exceed 20% of the Subcontractor's Actual Costs.

D. If the Change Order deletes Work, then the Contract Price shall be reduced by an amount equal to the sum of (a) the Actual Costs, plus (6) all unearned Profit and Additional Costs.

E. If BNYDC and the Contractor cannot agree on a price for the Change Order Work under paragraphs a), b) or c) above, then the Contractor agrees that Contractor shall nevertheless immediately perform or delete the Change Order Work. The price to be paid or the credit to be taken for said Change Order Work shall be determined by BNYDC based upon the current market value for said work (hereinafter referred to as "Actual Market Value"), but in no event shall such Actual Market Value exceed the Actual Costs of performing said Change Order Work. The determination of Actual Market Value shall be made by the President and shall be binding upon the Contractor.

<u>Section 6.4 Payment for Change Orders</u> Request for payment of a Change Orders may be included with the Contractor's next Partial Requisition. Such request shall constitute Contractor's agreement that the Change Order relieves BNYDC from any liability for Contractor's loss due to delay, disruption, cost, or expense occasioned by reason of such Change Order and further Contractor releases BNYDC from any further liability therefore.

<u>Section 6.5 Protest Work</u> Contractor must, at least 7 days prior to commencing Protest Work, give BNYDC a formal written notice of the Protest Work together with a detailed explanation of why the contested work is not already covered by the Contract and an itemization of the cost to perform such disputed work. Notwithstanding any such claim of Protest Work, the Contractor shall proceed to diligently perform the Work in question, unless BNYDC shall by written notice direct that such work shall not be performed.

<u>Section 6.6 Protest Work Records</u> Contractor shall, while performing Protest Work, furnish BNYDC daily a written report showing:

- A. The name and social security number of each worker performing Protest Work (hereinafter referred to as a "Protest Worker"); and
- B. The number of hours worked by each Protest Worker; and
- C. The type of work each Protest Worker performed; and

- D. The cost, nature and quantity of all materials accompanied by paid receipts from the vendor from whom such materials were purchased showing date purchased and cost; and
- E. The cost, nature and quantity of all equipment furnished or used in connection with the Protest Work accompanied by certified records showing daily usage costs, paid receipts from the vendor from whom such equipment was purchased or rented showing date purchased or rented and cost.

Failure to comply with the requirements of this Section 6.6 shall be deemed a waiver of any claim for payment on account of Protest Work.

ARTICLE 7

SUBCONTRACTS

<u>Section 7.1 Subcontracts</u> The Contractor is not an agent of BNYDC, the City or DSBS. All Subcontracts are between Contractor and Subcontractor. BNYDC, the City and DSBS have no responsibility for and assume no liability under any Subcontract.

Contractor shall include in each Subcontract a representation and warranty that Subcontractor presently has no interest, and Subcontractor shall not acquire any interest, which would directly or indirectly conflict, in any manner or degree, with the performance of Work on the Project and that no person with any such conflicting interest shall be employed in the performance of the Subcontract; any such interest on the part of the Subcontractor, its employees, agents or assigns must be fully disclosed to BNYDC.

The Contractor shall include and enforce all applicable terms and conditions set forth in this Contract in every Subcontract.

<u>Section 7.2 Investigation Forms for Subcontractors</u>. The Contractor shall cause each Subcontractor to submit to the City, Mayor's Office of Contract Services (hereinafter referred to as MOCS), a Procurement and Sourcing Solutions Portal (hereinafter referred to as "PASSport") profile. The Subcontractor shall not commence Work until BNYDC receives clearance from the MOCS.

Section 7.3 Indemnification of Subcontractor's Lien. To the fullest extent permitted by law, Contractor indemnifies and holds BNYDC, the City, DSBS and the directors, officers, agents and employees of each harmless against any and all Subcontractors' liens which may be filed. If the Contractor fails to promptly discharge all Subcontractors' liens, BNYDC shall make no further payment to the Contractor under this Contract. BNYDC, the City and DSBS shall have the right to discharge any liens which may be filed by any Subcontractor of any tier, and may recover the costs of securing such discharge from the Contractor by withholding such amount from the next payment due or otherwise.

ARTICLE 8

INSPECTION AND COMPLETION OF THE WORK

<u>Section 8.1 Inspection</u> All Work, materials and methods of construction shall at all times be subject to the inspection by BNYDC or its designee, or any City, New York State or Federal agency or department with jurisdiction over the Premises. If any Work, material or method of construction does not meet the approval of BNYDC or its designee, or any City, New York State or Federal agency or department with jurisdiction over the Premises such Work, material or method of construction shall be immediately changed, corrected, replaced and made good, at the Contractor's expense. BNYDC shall be the final judge of the quality and suitability of the Work, materials, and the methods of construction. Acceptance of any Work, material or method of construction shall not relieve the Contractor from any of its obligations under this Contract. BNYDC and its agents shall have no liability or obligation as a result of the inspection and the Contractor shall not be relieved of any Contract obligations by the making of an inspection or any acceptance resulting therefrom.

<u>Section 8.2 Substantial Completion of the Work</u>. When Contractor believes that the Work is complete Contractor shall request in writing that BNYDC inspect the Project. The Project shall be deemed substantially completed (hereinafter referred to as "Substantial Completion") on the date when all of the following shall have occurred:

A. BNYDC may use and occupy the Project; and

B. Only minor incomplete or unsatisfactory Work (hereinafter referred to as "Punch Lists"), if any, remains incomplete provided it does not interfere with BNYDC's use and occupancy; and

C. A Temporary Certificate of Completion or Certificate of Occupancy and/or such other required approval (i.e., a Notice of Completion or a New York City agency sign-off, as may be applicable) shall have been issued by the appropriate local governmental authority for all or a portion of the Project.

Section 8.3 Punch List When BNYDC or its designee prepares a Punch List, Contractor shall promptly complete and/or correct said work on the Punch List. The Contractor shall remain fully responsible to perform all Work whether or not there is a Punch List. BNYDC shall be entitled to withhold from any payment, in addition to any other sums properly withheld hereunder, the sum of two times the value of the Punch List, but in no event less than \$1,000.

<u>Section 8.4 Final Completion of the Work</u>. The Project shall be deemed finally completed (hereinafter referred to as "Final Completion") on the date when the Work shall have been finally completed and BNYDC shall have received:

- A. Evidence that all Work including Punch List items, have been fully and satisfactorily completed in a good and workmanlike manner, in conformance with this Contract; and
- B. The Project has received, in full compliance with all applicable laws, rules, requirements and regulations of all government Authorities having jurisdiction over the Project the required signoffs and Certificates of Completion and/or Occupancy; and
- C. Contractor has delivered all final certificates of approval relating to the Work and the contemplated uses of the Project, including, without limitation, all necessary certificates of the Board of Fire Underwriters or any successor thereof, Inspection and approval by the Bureau of Electrical Control, the City Fire Department, the City Department of Environmental Protection, all warranties and all guarantees for the Work and the Certificate of Completion and/or Occupancy, shall have been delivered to BNYDC; and
- D. All required receipts, releases, releases of liens, affidavits, waivers, as-built drawings and any other documents required under this Contract shall have been delivered to BNYDC.

<u>Section 8.5 Project Engineer</u> BNYDC may employ a Project Engineer as BNYDC's representative at the Project Site(s). The Project Engineer shall, subject to review by BNYDC, have the authority, in the first instance, to inspect, supervise and control the performance of the Work.

NOTE – The Project Engineer, or any other person, does not have the power to issue a Change Order. Only the President, in compliance with section 6.3, has the power to issue a Change Order.

Section 8.6 Occupation or Use Prior to Completion BNYDC shall have the right before the Final Completion, to take over, occupy, operate or otherwise use any part of the Project. Contractor shall not interfere with or object to such take over, occupancy, operation or use any part of the Project. BNYDC shall notify Contractor in writing of such take over, occupancy, operation or use part of the Project specifying the date of such take over, occupancy, operation or use of part of the Project. Contractor's guarantee on the part of the Project taken over, occupied, operated or used by BNYDC shall begin on the date of such take over, occupancy, operation or use by BNYDC. If BNYDC shall take over, occupy, operate or use any part of the Project, BNYDC shall first inspect the parts of the Project to be so taken over, occupied, operated or used by BNYDC. Contractor will then be furnished in writing with a statement of Substantial Completion, and a Punch List for such part so taken over, occupied, operated or used by BNYDC.

ARTICLE 9

SUSPENSION OF WORK; TERMINATION

Section 9.1 Suspension BNYDC may, at any time, with or without cause, suspend the Work or any portion thereof for a period of not more than 90 days by giving Contractor written notice of such suspension (hereinafter referred to as "Suspension Notice"). Contractor shall immediately stop the Work covered by BNYDC's Suspension Notice and cause all Subcontractors to stop the Work covered by BNYDC's Suspension Notice. Contractor and Subcontractors shall resume the Work on the date set by BNYDC. Contractor and Subcontractors shall not be entitled to any additional compensation for costs attributable to any suspension, but the time for completion of the Work shall be extended by the period of suspension. The Contractor shall secure and make safe the Project Site(s) to BNYDC's satisfaction during any suspension.

CONSTRUCTION CONTRACT NUMBER [___] CONTRACTOR [____]

Section 9.2 Defaults and Terminations for Cause In addition to any other rights that BNYDC may have, BNYDC shall have the right to declare the Contractor in default and terminate, for cause, this Contract, in whole or in part, if any of the following occur:

- A. The Contractor shall become insolvent; or
- B. The Contractor shall fail to perform the Work in the method and manner required by BNYDC; or
- C. The Contractor shall fail to complete the Work within the Term; or

D. The Contractor shall fail to assign workers, order materials or enter into Subcontracts in a manner deemed sufficient by BNYDC to permit completion of the Work in accordance with the approved work schedule; or

E. The Contractor's interest in this Contract or its right to receive funds shall be assigned, transferred, conveyed or otherwise disposed of voluntarily or by operation of law without the prior written consent of BNYDC; or

F. The Contractor shall not comply with or violate any provision of this Contract; or

G. The Contractor shall fail to comply with any of the applicable laws, rules, regulations or orders that may be applicable to this Contract, or the Contractor shall be defaulted or debarred by the City, the State of New York or the United States Government; or

H. 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.

Section 9.3 Termination for Convenience BNYDC reserves the right to terminate Contract at any time for its own convenience, without fault, and for such reasons as BNYDC deems appropriate (hereinafter referred to as "Convenience Termination"). A Convenience Termination shall take effect immediately upon Contractor receipt of BNYDC's written Convenience Termination notice. Contractor shall be entitled to full payment of sums due hereunder for Work

performed prior to such Convenience Termination. Contractor shall not be entitled to profit or overhead on the unperformed portion of the Work.

<u>Section 9.4 Effects of a Default or a Termination</u> Upon termination of this Contract, Contractor and all Subcontractors will immediately cease work and take all necessary steps to remove all hazards so as to make the Project Site(s) safe. After securing the Project Site(s), Contractor shall promptly present BNYDC a statement of costs actually incurred to the date of termination. The Contractor shall not recover as part of its costs any unearned or anticipated overhead or profit for itself or for its Subcontractors as a result of any termination.

Section 9.5 Payment Due when Termination not for Cause BNYDC will promptly review the statement of costs submitted by the Contractor by verifying and auditing all canceled checks, Subcontracts, paid receipts, bills from Subcontractors and any other document deemed necessary. BNYDC will notify the Contractor in writing when BNYDC is satisfied that the statement of costs is accurate (hereinafter referred to as "Approved Statement of Costs"). Contractor may then submit a Final Requisition for the balance of the Approved Statement of Costs, Contractors Final Release and Final Lien Waivers, all Subcontractors Final Release and Final Lien Waivers. Receipt of payment from BNYDC of the amount of the Final Requisition shall be full and final payment to the Contractor.

<u>Section 9.6 Payment Due when Termination is for Cause</u> In addition to any other rights BNYDC may have in law, in equity, or under this Contract if termination is for cause, BNYDC may, at its sole discretion, have the Work completed by another Contractor of its choice, or elect not to complete the Work.

BNYDC shall deduct from all monies then due Contractor the sum of:

- A. All expenses incurred in completing the Work; or
- B. The value of the Work not completed (as determined by BNYDC, in its sole discretion; and
- C. all incidental expenses incurred as a result of the termination for cause, including all actual legal fees and accounting fees.

If, after making the above computation, there remains a balance due Contractor BNYDC shall pay such amount to the Contractor upon Contractor submitting a Final Requisition for such balance, Contractors Final Release and Final Lien Waivers, all Subcontractors Final Release and Final Lien Waivers. Receipt of payment from BNYDC of the amount of the Final Requisition shall be full and final payment to the Contractor.

If there is a balance due from the Contractor to BNYDC, then the Contractor shall immediately pay that amount to BNYDC.

No monies shall be due or payable to Contractor, if Contract is terminated for cause, until the Project is completed or BNYDC abandons the Project.

BNYDC need not wait until the completion of the Project to seek the enforcement of its rights hereunder.

ARTICLE 10

PROTECTION OF PERSONS AND PROPERTY; INDEMNIFICATION

<u>Section 10.1Protection of Persons and Property</u> The Contractor is responsible for providing safety and protection for all persons at the Project Site(s). The Contractor is responsible for all property damage, loss, injury, theft or vandalism at the Project Site(s) resulting from the Contractor's acts or omissions or those acts or omissions of any Subcontractors or any act or omission by anyone for whose acts Contractor may be liable.

<u>Section 10.2 Indemnification</u> To the fullest extent permitted by law, Contractor agrees to indemnify, keep indemnified, and hold harmless BNYDC and the City and their respective affiliates, officers, directors, members, partners, trustees, beneficiaries, agents and employees (hereinafter referred to as "Indemnities") from and against any and all liability, civil money penalties, fines, claims, losses, suits, damages, demands, judgments, actions, causes of action, settlements, expenses including but not limited to attorney's fees and disbursements, costs and charges of every nature and kind, both legal and otherwise, whether direct or indirect, arising out of (i) the acts or omissions of the Contractor, its Subcontractors, agents, employees or material suppliers, and any and all Persons on the Project Site(s) or in connected to the Work or (ii) any negligence, fault or default of the Contractor, its Subcontractors, agents, employees or material suppliers.

Contractor specifically agrees and acknowledges that there shall be no personal liability on the part of any officer, director, employee or agent of the Indemnities in connection with this Contract or otherwise.

This section 10.2 shall survive any termination of this Contract and remain in full force and effect.

<u>Section 10.3 BNYDC, the City and DSBS not liable</u> BNYDC, the City and DSBS shall not be liable for any damage, injury or liability that may be sustained by Contractor, Subcontractor or any other person whatsoever, or to their goods and chattels from any cause whatsoever arising from or out of the Work at the Project Site(s). Contractor hereby releases and discharges BNYDC, the City and DSBS from any and all demands, claims, actions and causes of action arising from the aforesaid.

Contractor shall look solely and exclusively to the funding for this Project for the satisfaction of any claim or cause of action Contractor may have against BNYDC, the City or DSBS in connection with this Contract or the failure of BNYDC to perform any of its obligations hereunder.

Section 10.4 Contractor Not an Agent of BNYDC, the City, or DSBS Contractor, Contractor's employees, Subcontractors or Subcontractor's employees are not agents, servants or employees of the Indemnities by virtue of this Contract or by virtue of any approval, permit, license, grant, right or authorization given by BNYDC, the City, DSBS or any of their officers, directors, employees or agents. Contractor, Contractor's employees, Subcontractors, or Subcontractor's employees shall not in any way directly or indirectly represent that they are agents, servants or employees of the Indemnities. The Contractor is solely responsible for the work, direction, compensation and personal conduct of its officers, employees, agents, Subcontractors, Subcontractor's officers, employees, and agents.

ARTICLE 11

INSURANCE AND BONDS

<u>Section 11.1 Insurance, Performance Bond and Payment Bond</u> Contractor and each Subcontractor shall provide:

- A. Proof of Insurance as set forth in **Exhibit "G"** which is attached hereto and made a part hereof; and
- B. A Performance Bond in the exact form set forth in **Exhibit "H"** which is attached hereto and made a part hereof in the Penal Sum set forth in Attachment 1 of the IFB; and

C. A Payment Bond in the exact form set forth in **Exhibit "H"** which is attached hereto and made a part hereof in the Penal Sum set forth in Attachment 1 of the IFB.

<u>Section 11.2 Bid Security</u> The bid bond or bid deposit as required by the RFB, the IFB and the BSD shall be retained by BNYDC as security for the Contractor entering into this Contract and commencing Work on the Project. A bid bond will be only be returned to the Contractor in compliance with its own terms. A bid deposit will only be returned to Contractor after the BNYDC receives this Contract duly executed by Contractor, the required Performance Bond and the required Payment Bond.

ARTICLE 12

LABOR AND MATERIALS; GUARANTEES

Section 12.1 Materials and Equipment All materials and equipment permanently installed in or on the Project shall be new, except as approved by BNYDC or as specified in the Construction Documents. Notwithstanding the foregoing, BNYDC encourages the use of recycled products where practicable. The Contractor shall notify BNYDC if it intends to use recycled products with respect to any materials to be permanently installed on the Project. All labor performed on the Project shall be performed by skilled workers in their respective trades and shall be of first class quality in accordance with the standards of the construction industry and the particular trade. The Contractor shall obtain in the name of BNYDC all manufacturers' warranties and guarantees on all equipment and materials required by this Contract and installed in or on the Project and shall deliver such warranties and guarantees to BNYDC.

Section 12.2 Guarantee of Work Unless otherwise specifically set forth in the Construction Documents or elsewhere in this Contract, Contractor fully warrants and guarantees the materials, equipment, and Work against any and all defects whether latent or patent for a period of one year from the date Final Completion is achieved (hereinafter referred to as the "Warranty Period"). During the warranty period Contractor shall promptly repair, replace, rebuild or restore (as BNYDC may direct) all defective Work and materials and shall pay all costs for labor and materials necessary to correct such defective Work. Should Contractor fail to promptly repair, replace, rebuild or restore such defective Work and Contractor shall promptly pay to BNYDC all costs incurred by BNYDC in connection therewith. BNYDC's certificate setting forth the costs incurred in repairing, replacing, rebuilding or restoring any damaged or defective Work shall be binding and conclusive as to the amount thereof upon the Contractor.

Section 12.3 Security for Materials and Guarantees As security for the Contractor's faithful performance of its obligations under this Article 12, BNYDC will deduct from the Final Completion payment an amount equal to one percent (1%) of the Contract Price or such greater amount fixed in the RFB, the IFB and the BSD (hereinafter referred to as "Retainage"). In BNYDC's sole discretion, BNYDC may require Contractor to post in addition to the Retainage security in such amount, as BNYDC deems necessary to guarantee Contractors performance under this Article 12.

If Contractor faithfully performs all its obligations hereunder, BNYDC will as soon as practicable after the expiration of the Warranty Period return to Contractor the Retainage and additional security, if any, without interest. Notice by BNYDC to repair, replace, rebuild and/or restore any defective or damaged Work shall be timely if given up to 10 days after the expiration of the Warranty Period.

<u>Section 12.4 Rights not Exclusive</u> BNYDC's rights under this Article 12 are in addition to all other rights BNYDC may have under this Contract, at law or in equity.

ARTICLE 13

TITLE TO THE WORK, MATERIALS AND EQUIPMENT

Section 13.1 Tax Exempt Status Pursuant to Section 1115(a)(15) and (16) of the New York State Tax Law, purchases of tangible personal property by the Contractor or its Subcontractors arising out of this Contract are exempt from the sales and use tax imposed by Article 28 of the New York State Tax Law, to the extent that such property is used to alter, maintain or improve, and becomes an integral component part of City-owned or leased real property which is improved under this Contract. This exemption does not apply to tools, machinery, equipment or other property purchased or leased by the Contractor or its Subcontractors, or to supplies, materials or other property which are consumed in the course of construction or for any other reason not incorporated into the real property which is improved under this Contract.

Section 13.2 Exclusion of Tax From Contract Price Contractor represents and warrants that to the extent applicable state and local sales taxes have been excluded from the Contract Price. Contractor and its Subcontractors shall be responsible for and shall pay any and all applicable taxes, including sales and use taxes imposed upon purchased or leased tools, machinery, equipment, and upon all such unincorporated supplies and materials and other property as

provided by law. The Contract Price shall be deemed to include full payment and consideration for the sale of all supplies and materials necessary for the performance of the Contract.

Section 13.3 Evidence of Title At the request of BNYDC, Contractor shall furnish BNYDC such paid bills, bills of sale and/or other instrument properly executed, acknowledged and delivered as BNYDC may require, proving title for all supplies, materials and equipment permanently installed in or on the Project has passed to the City, free of liens or encumbrances. Contractor shall clearly mark or otherwise identify all such materials as the property of the City.

<u>Section 13.4 Title to Materials</u> Title to all materials used on the Project immediately vests in BNYDC upon the earlier of (1) delivery of such materials to the Premises or (2) payment by BNYDC for such materials. Notwithstanding such transfer of title to the materials until such time as such materials are installed in accordance with the provisions of this Contract and up to Final Completion of the Work, Contractor shall:

- A. Protect the materials against loss or damage, and maintain the materials in proper condition and repair; and
- B. Replace or make good any loss, theft, disappearance, or damage to the materials, and furnish additional materials in place of any that may be lost, stolen or rendered unusable all without cost to BNYDC.

Such transfer of title shall in no way affect any of the Contractor's obligations hereunder.

BNYDC reserves the right, in its sole discretion, to reject any defective or otherwise unsatisfactory materials. Title to any rejected, defective or otherwise unsatisfactory materials shall be deemed to revert to Contractor.

Section 13.5 Subcontracts to Separate Materials from Labor All Subcontracts shall be in a form similar to this Contract with respect to the separation of the sale of materials from the work and labor, services, consumable supplies and any other items to be provided. The Subcontracts shall provide separate prices for (1) materials and (2) all other services and items. Such separation shall actually be followed in practice, including the separation of payments for materials from the payments for other work and labor and other things to be provided.

<u>Section 13.6 Tax Exempt Certificates</u> Contractor and Subcontractors shall obtain, Contractor Exempt Purchase Certificates (Form ST-120.1) and shall furnish to all persons, firms or corporations from which they purchase materials for the performance of the Work such Contractor Exempt Purchase Certificates.

ARTICLE 14

REPRESENTATIONS AND WARRANTIES

Contractor represents and warrants the following:

Section 14.1 Illegal Consideration

Contractor has not been asked to pay, and has neither offered to pay, nor paid, any illegal consideration, whether monetary or otherwise, in connection with the procurement of this Contract.

<u>Section 14.2 Solicitation</u> Contractor has not employed any person to solicit or procure this Contract, and has not made and shall not make, except to full time employees of the Contractor, any payment or any agreement for the payment of any commission, percentage, brokerage, contingent fee or any other compensation in connection with the procurement of this Contract.

Section 14.3 Conflict of Interest Contractor has not acquired nor will it acquire any interest of any nature, direct or indirect (including without limitation, any interest in land in an area related to the Work or any interest in any corporation, partnership, etc. with any such interest), which would conflict in any manner or degree with the performance of the Work and no person having any such conflicting interest shall be employed by the Contractor in the performance of this Contract.

Section 14.4 Investigation Forms All questionnaires and disclosure forms delivered by the Contractor to BNYDC to date are, to the best of the Contractor's knowledge, true and correct in all material respects; no material change has occurred in the circumstances of the Contractor, its principals, or affiliated persons or entities since the respective dates upon which such disclosure forms were executed which would otherwise require disclosure on such forms; and no material disclosed in such disclosure forms contains, to the best of the Contractor's knowledge, any untrue statement of a material fact or omits to state a material fact necessary in order to make any statement contained in such form not misleading.

<u>Section 14.5 Anti-Boycott Provisions</u> Contractor shall comply in all respects with the provisions of §6-114 of the Administrative Code of the City and the rules and regulations issued by the Comptroller of the City thereunder.

Contractor certifies it is not now participating in, nor shall it participate in, during the term of this Contract, an international boycott in violation of the provisions of the Export Administration Act of 1979, as amended, or the regulations promulgated thereunder.

Upon the final determination by the United States Department of Commerce or any other agency of the Government of the United States that Contractor has participated in an international boycott in violation of the provisions of the Export Administration Act of 1979, as amended, or the regulations promulgated thereunder, BNYDC may, at its sole option, render this Contract forfeit and void.

ARTICLE 15

WOMEN OWNED AND MINORITY OWNED BUSINESSES PARTICIPATION

Section 15.1 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 "MBEs and 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. BNYDC endorses these goals and has adopted an M/WBE Program to further participation by MBEs and WBEs for its projects. The Contractor shall comply with all requirements of BNYDC's M/WBE Program described in this Contract.

Section 15.2 M/WBE Participation Goal.

A. The percentage goal for M/WBE participation (the "Participation Goal") for the Contract is [__]% of the total dollar value of the Contract. The Participation Goal represents a percentage of the total dollar value of the Contract that may be achieved by awarding subcontracts to firms certified with DSBS or DMWBD (each as defined below) as MBEs or WBEs, and/or by crediting the participation of prime contractors and/or qualified joint ventures as provided in Section 15.2(D) and Section 15.2(E) below.

- B. M/WBE firms must be certified by either (i) DSBS, or (ii) Empire State Development's Division of Minority and Women's Business Development ("DMWBD") to credit such firms' participation toward attainment of the Participation Goal. Such certification must occur prior to the firms' commencement of work. A list of M/WBE firms may be obtained (i) 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 Street, New York, New York, 10038, 7th Floor, and (ii) from the ESD website at www.ny.newnycontracts.com. Eligible firms that have not yet been certified may contact DSBS or DMWBD for additional information on how to get certified. No credit shall be given for participation by a graduate M/WBE, as defined in Section 6-129(c)(20).
- C. The Participation Goal is a material term of this Contract and the Contractor shall be subject to the BNYDC approved Participation Goal.
- D. An M/WBE Contractor shall be permitted to count its own participation toward fulfillment of the Participation Goal. The value of an M/WBE Contractor's participation shall be determined by subtracting from the total value of the Contract any amounts that the Contractor will pay to direct Subcontractors. 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. If a Contractor is not an M/WBE, it must meet the Participation Goal through the awarding of subcontracts to firms certified with DSBS or DMWBD as MBEs or WBEs.
- E. A Contractor that is a Qualified Joint Venture (as defined in Section 6-129, and as discussed further in Section 5) shall be permitted to count a percentage of its own M/WBE participation toward fulfillment of the Participation Goal. The value of Contractor's participation shall be determined by subtracting from the total value of the Contract 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.

Section 15.3 M/WBE Proposal Submission Forms.

A. The Contractor has submitted with its bid a completed M/WBE Utilization Plan, which is attached as Exhibit "P", indicating:

- i. whether the Contractor is an MBE or WBE, or Qualified Joint Venture;
- ii. the percentage of work it intends to award to direct Subcontractors;
- iii. 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 copies of DSBS or DMWBD certifications for each proposed MBE or WBE subcontractor listed in its M/WBE Utilization;
- iv. the Contractor's required certification and affirmations, as attached as Exhibit "P" to this IFB.
- THE CONTRACTOR HAS COMPLETED AN M/WBE UTILIZATION B. PLAN, AS ATTACHED HERETO AS EXHIBIT "P". IN THE EVENT THAT BNYDC DETERMINES THAT THE CONTRACTOR HAS SUBMITTED AN M/WBE UTILIZATION PLAN WHERE THE VENDOR CERTIFICATION AND REQUIRED AFFIRMATIONS ARE COMPLETED BUT OTHER ASPECTS OF THE M/WBE UTILIZATION PLAN ARE NOT COMPLETE, OR CONTAIN A COPY OR COMPUTATION ERROR THAT IS AT ODDS WITH THE VENDOR CERTIFICATION AND AFFIRMATIONS, THE CONTRACTOR WILL **BE NOTIFIED BY BNYDC AND WILL BE GIVEN FOUR (4)** CALENDAR DAYS FROM RECEIPT OF NOTIFICATION TO CURE THE SPECIFIED DEFICIENCIES AND RETURN A COMPLETED M/WBE UTILIZATION PLAN TO BNYDC. RECEIPT OF NOTIFICATION IS DEFINED AS THE DATE NOTICE IS E-MAILED OR FAXED (IF THE CONTRACTOR 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.**
- C. Every twelve (12) months within the Term, the Contractor shall submit a list of proposed persons or entities to which it intends to award subcontracts within the subsequent 12 months. BNYDC 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)). In the event that the Contractor's selection of a Subcontractor is disapproved, the Contractor shall have a reasonable time to propose alternate subcontractors.

Section 15.4 Statements Submitted with Requests for Payment. CONSTRUCTION CONTRACT NUMBER [__] CONTRACTOR [____]

A.	The Contractor shall, with each voucher for payment, and/or periodically
	as BNYDC may require, submit statements, certified under penalty of
	perjury, which shall include, but not be limited, to:
	i. 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;
	ii. 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
	iii. the dates and amounts paid to each MBE or WBE.
B.	The Contractor shall also submit, along with its voucher for final payment:
	i. 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
	ii. 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.
C.	If payments made to, or work performed by, MBEs or WBEs are less than
	the amount specified in the Contractor's M/WBE Utilization Form,
	BNYDC shall take appropriate action, in accordance with the enforcement
	provisions described in the Contract and in Section 15.13.
Secti	on 15.5 Modifications Based on Change Orders. Where the Contractor
	asta a change and an the value of which avecade the greater of 10 percent of

Section 15.5 Modifications Based on Change Orders. Where the Contractor requests a change order the value of which exceeds the greater of 10 percent of the Contract, as applicable, or \$500,000, BNYDC 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 Goal should be modified.

<u>Section 15.6 Other M/WBE Requirements.</u> The IFB contains additional provisions related to the M/WBE requirements applicable to this Contract.

Section 15.7 Intentionally Omitted

Section 15.8 Modification of M/WBE Utilization Plan.

A. A Contractor may request a modification of its M/WBE Utilization Plan (a "Modification") during the Term of this Contract. BNYDC 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 Goal. In making such determination, BNYDC 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 were due, for the purpose of explaining in detail the scope and requirements of the work for which their bids 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 BNYDC's M/WBE liaison officer at mwbe@bnydc.org and to DSBS and DMWBD;
- viii. Description of how recommendations made by DSBS, DMWBD and BNYDC 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.

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

B. BNYDC may modify the Participation Goal when the scope of the work has been changed by BNYDC 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.

<u>Section 15.9 Substitutions.</u> Substitutions to the MBEs and/or WBEs that Contractor identified as firms they intended to use in connection with the performance of the Contract may only be made with the approval of BNYDC, which shall only be given when the Contractor has proposed to use a firm that would satisfy the Participation Goal to the same extent as the firm previously identified, unless BNYDC determines that the Contractor has established, with appropriate documentary and other evidence, that it made reasonable, good faith efforts. In making such determination, BNYDC shall require evidence of the efforts listed in Section B(1) above, as applicable, along with any other relevant factors.

Section 15.10 Indefinite Quantity Contracts. If this Contract is for an indefinite quantity of construction or is a requirements type contract, 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 BNYDC has determined that such work is not needed.

Section 15.11 Progress Review, Evaluation and Assessment. At least once annually during the term of the Contract, BNYDC 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.

BNYDC 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.

Section 15.12 Miscellaneous Provisions.

- A. The Contractor shall take notice that this Contract may be audited. Furthermore, such this Contract may also be examined by the City's Comptroller to assess compliance with its M/WBE Utilization Plan.
- B. DSBS and DMWBD are 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.

C. The Contractor hereby acknowledges its understanding of the M/WBE Program requirements set forth herein and the Contractor hereby agrees to comply with the M/WBE Program requirements of this Contract, 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 Goal.

Section 15.13 Enforcement.

- A. Whenever BNYDC believes that the Contractor or a subcontractor is not in compliance with the M/WBE Program or its M/WBE Utilization Plan, BNYDC shall send a written notice to the Contractor describing the alleged noncompliance and offering the Contractor an opportunity to be heard. BNYDC shall then conduct an investigation to determine whether such Contractor or subcontractor is in compliance.
- B. In the event that the Contractor has been found to have violated the M/WBE Program or its M/WBE Utilization Plan, BNYDC may determine that one of the following actions should be taken:
 - i. entering into an agreement with the Contractor allowing the Contractor to cure the violation;
 - ii. revoking the Contractor's pre-qualification to bid for future contracts;
 - iii. making a finding that the Contractor is in default of the Contract;
 - iv. terminating the Contract;
 - v. declaring the Contractor to be in breach of Contract;
 - vi. withholding payment or reimbursement;
 - vii. determining not to renew the Contract;
 - viii. assessing actual and consequential damages;
 - ix. 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;
 - x. 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
 - xi. taking any other appropriate remedy.

- C. If the Contractor has been found to have failed to fulfill its Participation Goal contained in its M/WBE Utilization Plan or the Participation Goal as modified by BNYDC pursuant to Section 15.8, BNYDC 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 Goal 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 BNYDC will suffer by reason of Contractor's failure to meet the Participation Goal, the foregoing amount is hereby fixed and agreed as the liquidated damages that BNYDC will suffer by reason of such failure, and not as a penalty. BNYDC 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 BNYDC, the Contractor shall be liable to pay the difference.
- D. Whenever BNYDC 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)), BNYDC shall notify the Commissioner of DSBS or DMWBD, as applicable, who shall determine whether the certification of such business enterprise should be revoked.
- E. Statements made in any instrument submitted to BNYDC pursuant to the M/WBE Program 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 the M/WBE Program shall, in addition, be grounds for revocation of its certification.
- F. The Contractor's record in implementing its M/WBE Utilization Plan shall be a factor in the evaluation of its performance. Whenever BNYDC determines that a Contractor's compliance with an M/WBE Utilization Plan has been unsatisfactory, BNYDC shall, after consultation with the BNYDC M/WBE liaison officer, file an advice of caution form for inclusion in PASSPort as caution data.

ARTICLE 16

INVESTIGATION

Section 16.1 Cooperation with Investigation The parties to this Contract agree to cooperate fully and faithfully with any investigation, audit or inquiry conducted by BNYDC. The parties to this Contract agree to cooperate fully and faithfully with any investigation, audit or inquiry conducted by a State or 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 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. 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 take testimony under oath, or the Inspector General of the governmental agency that is a party in interest, and is seeking testimony, concerning the award of or performance under any transaction, agreement, lease, permit, contract, or license entered into with BNYDC, 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, if any person refuses to testify for a reason other than the assertion of his/her privilege against self incrimination in any such investigation, then BNYDC and/or 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 days written notice to the parties involved, to determine if any penalties should attach for the failure of a person to testify.

If any non-governmental party to the hearing requests an adjournment, BNYDC or the Commissioner who convened the hearing may, upon granting the adjournment, suspend any contract, lease, permit or license, pending the final determination, without the City or BNYDC incurring any penalty or damages for delay or otherwise.

<u>Section 16.2 Penalties</u> The penalties that may attach after a final determination by BNYDC or the Commissioner may include but shall not exceed:

A. The disqualification, for a period not to exceed five 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 BNYDC and/or the City; and/or

B. The cancellation or termination of any and all such existing BNYDC and/or 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 or BNYDC 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 BNYDC or the City.

Section 16.3 Factors in Assessing Penalties BNYDC and/or The Commissioner shall consider and address in reaching his/her determination and in assessing an appropriate penalty the factors in subparagraphs (a) and (b) below. BNYDC and/or The Commissioner may also consider, if relevant and appropriate, the criteria established in subparagraphs (c) and (d) below, in addition to any other information, which may be relevant and appropriate:

- A. 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.
- B. 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.
- C. The nexus of the testimony sought to the subject entity and its contracts, leases, permits or licenses with BNYDC and the City.

D. 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 as described above, provided that the party or entity has given actual notice to BNYDC and/or the Commissioner upon the acquisition of the interest, or at the hearing called for 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.

1. The term "license" or "permit" as used in this Article 16 shall be defined as a license, permit, franchise or concession not granted as a matter of right.

2. The term "person" as used in this Article 16 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.

3. The term "entity" as used in this Article 16 shall be defined as any firm, partnership, corporation, association, joint venture, limited liability company or person that receives monies, benefits, licenses, leases or permits from or through the City or otherwise transacts business with the City.

4. The term "member" as used in this Article 16 shall be defined as any person associated with another person or entity as a partner, member of a limited liability company, director, officer, principal or employee.

<u>Section 16.4 Termination</u> In addition to and notwithstanding any other provision of this Contract, the President and/or the Commissioner may in his/her sole discretion terminate this Contract upon not less than three days written notice in the event the Contractor fails to promptly report in writing to BNYDC and the Commissioner of the Department of Investigations 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 17

MISCELLANEOUS PROVISIONS

<u>Section 17.1 Notices</u> All notices, demands and requests required or permitted to be given under this Contract shall be in writing and shall not be effective unless personally delivered, sent by United States registered or certified mail, postage paid, return receipt optional, or sent by an overnight courier service of recognized reputation, addressed as hereinafter provided. All such notices, demands and requests mailed to BNYDC shall be addressed to BNYDC as follows:

> Brooklyn Navy Yard Development Corporation Building 77 141 Flushing Avenue, Suite 801 Brooklyn, New York 11205 Attention: Counsel

Or at such other address as BNYDC may from time to time designate by written notice to Contractor. All such notices, demands and requests mailed to Contractor shall be addressed to Contractor at Contractor's address as stated on page 1 hereof. Or at such other address as Contractor may from time to time designate by written notice to BNYDC.

Notices, demands and requests which shall be served in the manner aforesaid shall be deemed given for all purposes hereunder at the time such notice, demand, or request is deposited in any post office or branch post office or official depository regularly maintained by the United States Postal Service.

<u>Section 17.2 Severability</u> If any provision of this Agreement shall contravene or be invalid under the laws of the United States or the State, it is agreed that such provision shall not invalidate the whole Contract but the Contract shall be construed as if not containing the particular provision or provisions held to be invalid.

<u>Section 17.3 Claims and Actions Against BNYDC</u> Contractor shall look solely to the funds available to and appropriated by BNYDC under the City Contract for this particular project for the satisfaction of any claim or cause of action the Contractor may have against BNYDC in connection with this Contract. No director, officer, employee, agent or other person authorized to act on behalf of BNYDC shall have any personal liability in connection with this Contract or any failure of BNYDC to perform its obligations hereunder. The Contractor agrees that it shall have no claim against BNYDC for damages, or in any action or proceeding at law or in equity, unless the Contractor shall give notice of the

existence of such claims to BNYDC within sixty (60) days after the cause of action arose, or the damages first became ascertainable, whichever shall occur first. The notice of claim must strictly comply as to form with all of the provisions required by law regarding claims against the City as provided for in §7-201 of the New York City Administrative Code (except for the time to file such claim which shall be sixty (60) days) with service of the same to be made by personal delivery upon an officer or agent of BNYDC.

Serving the notice of claim in strict accordance with this Article shall be a necessary and non-waivable jurisdictional element of any claim by the Contractor. Any action or proceeding by the Contractor against BNYDC must be commenced within sixty (60) days after the service of said notice of claim, but not before thirty (30) days after the service of the notice of claim.

Contractor acknowledges that it will be adequately compensated by money damages alone for any act or omission of BNYDC and, therefore, specifically waives all rights that it may have for equitable relief, including injunctive relief. The filing of a Notice of Appeal by BNYDC in any judicial proceeding shall stay the enforcement of any judgment against BNYDC, pending a resolution and final determination of that appeal, without BNYDC posting any security and without any court order being obtained.

In addition to any other contractual statute of limitations set forth herein, the Contractor agrees that no action against BNYDC shall lie or be maintained if BNYDC is barred by any statute or time limitation whatsoever at the time the Contractor institutes its suit or for twenty (20) days thereafter, from maintaining, prosecuting or instituting any claim against the City, the State of New York, the United States Government, any insurance company which may be liable, or any of them, based upon the same facts alleged by the Contractor, either as a thirdparty plaintiff or in a plenary action.

Section 17.4 Governing Law & Venue. This Contract is deemed executed in the City of New York, State of New York and shall be governed by and construed in accordance with the laws of the State of New York. The parties agree that any and all claims asserted by or against BNYDC, the City or DSBS arising under this Contract or related hereto shall be heard and determined either in the courts of the United States ("Federal Courts") located in New York City or in the courts of the State of New York ("New York State Courts") located in the City and County of New York.

<u>Section 17.5 Service of Process</u> If BNYDC, the City or DSBS initiates any action against the Contractor in Federal Court or in New York State Courts, personal service of process may be made on the Contractor either in person, wherever the Contractor may be found, or by registered mail addressed to the Contractor at its address as set forth on page 1 of this Contract, or to such other address as the Contractor may have provided to BNYDC, the City or DSBS, as the case may be.

<u>Section 17.6 Waiver by the Contractor</u> With respect to any action between BNYDC, the City or DSBS and the Contractor in New York State Court, the Contractor expressly waives and relinquishes any rights it might otherwise have (1) to move to dismiss on grounds of forum non conveniens, (2) to remove to Federal Court, and (3) to move for a change of venue to a New York State Court outside New York County. With respect to any action between BNYDC, the City or DSBS and the Contractor in Federal Court located in New York City, the Contractor expressly waives and relinquishes any rights it might otherwise have to move to transfer the action to a Federal Court outside New York City.

Section 17.7 Change of Venue If the Contractor commences any action against the City or DSBS in a court located other than in the City and State of New York, upon request of BNYDC, the City or DSBS, as the case may be, the Contractor shall either consent to a transfer of the action to a court of competent jurisdiction located in the City and State of New York or, if the court where the action is initially brought will not or cannot transfer the action, the Contractor shall consent to dismiss such action without prejudice and may thereafter reinstitute the action in a court of competent jurisdiction in New York City.

<u>Section 17.8 Assignment</u> Contractor can neither assign this Contract, nor the right to receive the funds to be paid under this Contract, without the express written consent of BNYDC. BNYDC can either assign this Contract or the rights hereunder to the City without the consent of the Contractor.

Section 17.9 Contract Interpretations In the event any interpretation of this Contract is required after execution, or if any actual or apparent conflict between any two or more provisions of the Contract is discovered, then the Contract or such conflict shall be interpreted by the President and that interpretation shall be conclusive and binding on the parties hereto. In the event of any dispute between BNYDC and the Contractor as to whether or not the Work is completed, the inspection report of BNYDC or its agent shall be considered binding, final and conclusive.

<u>Section 17.10 Titles</u> The titles to any article or any subdivision of this Contract are for organizational purposes only.

Section 17.11 Merger This Contract may not be modified orally. This Contract may be supplemented, amended or revised only in writing by the mutual agreement of the BNYDC and Contractor. This Contract supersedes all previous agreements and/or Contracts whether oral or written between the BNYDC and Contractor.

<u>Section 17.12 Non-Waiver</u> Forbearance, neglect or failure by BNYDC to enforce any and all of the provisions of this Contract or to insist upon strict compliance by Contractor shall not be construed as a waiver of any rights or privileges of BNYDC. A waiver by BNYDC of a past act or circumstance shall not constitute or be a course of conduct or waiver of any subsequent act or circumstance.

Section 17.13 Contractor's Performance Evaluation Provisions Contractor's performance of the Work may be evaluated by BNYDC (i) upon the vouchering of 50% of the Contract Price and/or (ii) upon Substantial Completion of the Work. BNYDC will send a copy of the evaluation to the Contractor after such evaluation and the Contractor may respond in writing to such evaluation. The response will be filed with the evaluation. The evaluation may be filed with the City.

By executing this Contract Contractor verifies that Contractor has carefully and completely reviewed and understands the terms and conditions this Contract.

IN WITNESS WHEREOF, the parties have hereunto set their hands and seal the day and year first above written.

BROOKLYN NAVY YARD DEVELOPMENT CORPORATION

By:	
Name:	
Title:	
[]	
Ву:	
Name:	
Title:	

BNYDC CONSTRUCTION CONTRACT
[ACKNOWLEDGMENT, IF A PARTNERSHIP

ss.:

STATE OF_____)

COUNTY OF _____)

On this day of ______, 20_, before me personally came ______, ____, to me known and known to me to be one of the partners of the firm of _______ described in and which 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

ACKNOWLEDGMENT, IF AN INDIVIDUAL

STATE OF_____)

COUNTY OF _____)

On this day of _____, 20_, before me personally came _____,

ss.:

Notary Public

ACKNOWLEDGMENT, IF A CORPORATION

STATE OF _)
------------	---

SS: COUNTY OF _____)

On the _____ day of ______ in the year 20__, before me personally came ______, to me known, who, being by me duly sworn, did depose and say that he is the ______ of _____, the corporation described in and which

executed the above instrument; and that he signed his name thereto by authority of the Board of Directors of said corporation.

Notary Public

_]

BNYDC CONSTRUCTION CONTRACT <u>EXHIBIT A</u> <u>E.O. 50 CONSTRUCTION RIDER</u>

A. EQUAL EMPLOYMENT OPPORTUNITY

This contract is subject to the requirements of Executive Order No. 50 (April 25, 1980) as amended ("E.O. 50") 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:

(1) It 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;

(2) When it subcontracts it will not engage in any unlawful discrimination in the selection of Subcontractors on the basis of the race, creed, color, national origin, sex, age, disability, marital status or sexual orientation of the owner, manager or any other officer, director, agent or employee of such Subcontractors;

(3) It 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 regard to race, creed, color, national origin, sex, age, disability, marital status or sexual orientation, or that it is an equal employment opportunity employer;

(4) It 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

(5) It will furnish all information and reports (which are required by E. O. 50, the rules and regulations promulgated thereunder, and orders of the Director of the New York City Department of Small Business Services, Division of Labor Services ("DLS"), including an Employment Report if the Contract Price is \$1,000,000 or more), before the award of the Contract and will permit access to its

books, records and accounts by DLS for the purposes of investigation to ascertain compliance with such rules, regulations, and orders.

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 DLS, the Director of DLS may direct the imposition upon the Contractor found to be in noncompliance of any or all of the following sanctions:

- (i) Disapproval of the Contractor;
- (ii) Suspension or termination of this Contract;
- (iii) Declaring the Contractor in default; or
- (iv) In lieu of any of the foregoing sanctions, the Director of DLS may impose an employment program.

The Director of DLS may recommend to BNYDC that a hearing be convened for purposes of declaring a Contractor who has repeatedly failed to comply with E. O. 50 and the rules and regulations promulgated thereunder to be non-responsible.

If the Contract Price is \$1,000,000 or more, the Contractor further agrees as follows:

(i) It shall employ trainees for training level jobs and it shall participate in on-the-job training programs, other than apprenticeship programs, that are approved by DLS and, where required by law, the U.S. Department of Labor, Bureau of Apprenticeship Training or the New York State Department of Labor;

(ii) It shall make a good faith effort to achieve the ratio of one "trainee" (which means an economically disadvantaged person who qualifies for and receives training in one of the construction trades pursuant to a program, other than an apprenticeship program, approved by DLS and, where required by law, the New York State Department of Labor and the United States Department of Labor, Bureau of Apprenticeship and Training) to four journey-level employees of each job group on each construction project. The Contractor shall be considered to employ four journey-level employees in a particular job group when he or she employs any number of journey-level employees in that craft whose aggregate work hours equal the number of hours four full time journeylevel employees would have worked in a work week as defined by the prevailing practice in the industry for the particular craft, i.e., 40 hours, 37 hours, 35 hours,

etc. For example, in a craft where there is a 40 hour work week, the employment of four journey-level employees results in 160 hours of employment (4 x 40). Hence, any number of journey-level employees which results in 160 hours of work is considered for purposes of the training program to equal four journey-level employees, i.e., three journey-level employees who work 53 hours (3 x 53 = 160). The training requirement shall not apply to any trade in which the employment of four or more journey-level employees and the trainee shall be for less than four weeks; provided, that four weeks shall mean four weeks of full time work as defined by the prevailing practice in the industry for the particular craft, i.e., 160 hours (4 weeks x 40 hours), 150 hours (4 weeks x 37 hours), 140 hours (4 weeks x 35 hours), etc.;

(iii) It shall attempt to provide continuous employment for trainees after the completion of this Contract to enable them to complete their course of training;

(iv) It shall, to the extent it is a party to any collective bargaining agreement, refer, recommend and sponsor for union membership any of its trainees who can perform the duties of a qualified journey-level employee or who have successfully completed the training program. Such former trainees shall be paid full journey-level wages and fringe benefits, whether or not union membership is granted after such referral, recommendation or sponsorship, and the Contractor shall make good faith efforts to continue the employment of such persons; and

(v) If the Contractor fails to provide training to the required number of trainees for the required number of weeks, the Contractor's compensation shall be decreased by an amount (the "Credit") equal to the difference between the wages and fringe benefits paid by the Contractor to the trainees and the wages and fringe benefits which would have been paid to the trainees had the number and duration of the positions been as required unless the Contractor can demonstrate that it made a good faith effort to provide training and was unsuccessful. The wages and fringes deducted will be whatever a first term trainee would receive under the prevailing wage schedule in effect at the time the trainees should have been employed. For purposes hereof, a good faith effort includes but is not limited to:

- (a) Documented efforts to secure trainees from approved training programs,
- (b) Documented outreach efforts to community and civil rights groups to identify candidates for training positions and sponsorship of those

persons by the Contractor for entrance into an approved training program, and

(c) Written notification to DLS that the Contractor has been unable to secure trainees pursuant to subsections (a) and (b) above and requesting DLS's assistance in securing trainees; provided, that neither the provisions of any collective bargaining agreement nor the refusal by a union with which the Contractor has a collective bargaining agreement to recognize the validity of the training program shall excuse the Contractor's obligation to provide training pursuant to E.O. 50 and these regulations.

If the Contract Price is \$1,000,000 or more, the Contractor shall include the provisions of the foregoing paragraph in every subcontract in the amount of \$750,000 or more to which it becomes a party unless exempted by E.O. 50 and the rules and regulations promulgated thereunder, so that such provisions will be binding upon each subcontractor. If the Contract Price is less than \$1,000,000, the Contractor shall include the provisions of this rider (other than the provisions of the immediately preceding paragraph) in every subcontract or purchase order in excess of \$50,000 to which it becomes a party unless exempted by E.O. 50 and the rules and regulations promulgated thereunder, so that such provisions will be binding upon each subcontractor or vendor. The Contractor will take such action with respect to any subcontract or purchase order as may be directed by the Director of DLS as a means of enforcing such provisions including sanctions for noncompliance and/or the taking of a Credit.

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.

B. <u>CONSTRUCTION EMPLOYMENT REPORT SUBMISSION</u> <u>REQUIREMENTS</u>

Pursuant to Executive Order No. 50 (April 25, 1980) as amended and the implementing rules and regulations, all Contractors with contracts of \$1,000,000 or more, and all subcontractors with contracts of \$1,000,000 or more, must complete and submit an Employment Report (ER) and EEO-1 report. If you submit an ER you must comply with the training requirements set forth above.

If you are a Contractor with a contract of less than \$1,000,000 you must complete the attached certification of less than \$1,000,000 contract.

BNYDC CONSTRUCTION CONTRACT		
DEPARTMENT OF SMALL BUSINESS SERVICES DIVISION OF LABOR SERVICES		
LESS THAN \$1,000,000 CONTRACT CERTIFICATE		
CONTRACTOR		
ADDRESS		
TELEPHONE # ()		
NAME & TITLE OF SIGNATORY		
CONTRACTING ENTITY BROOKLYN NAVY YARD DEVELOPMENT CORPORATION		
CONTRACT AMOUNT		
PROJECT NUMBER		
DESCRIPTION AND ADDRESS OF PROPOSED CONTRACT		
I, (fill in name of person signing)hereby affirm that I am authorized by the above named Contractor to certify that said Contractor's proposed contract with the above named entity or City agency is less than \$1,000,000.		
DATE SIGNATURE WILLFUL OR FRAUDULENT FALSIFICATION OF ANY DATA OR INFORMATION SUBMITTED HEREWITH MAY RESULT IN THE TERMINATION OF ANY CONTRACT BETWEEN THE CITY AND THE BIDDER OR CONTRACTOR AND BAR THE BIDDER OR CONTRACTOR FROM PARTICIPATION IN ANY CITY CONTRACT FOR A PERIOD OF UP TO THREE YEARS. FURTHER, SUCH FALSIFICATION MAY RESULT IN CRIMINAL PROSECUTION.		

BNYDC CONSTRUCTION CONTRACT <u>EXHIBIT B</u>

MACBRIDE PRINCIPLES RIDER

For purposes of this rider, the "Contractor" means the Contractor, as defined in the Contract to which this rider is attached, and the "contracting entity" means Brooklyn Navy Yard Development Corporation.

ARTICLE I. MACBRIDE PRINCIPLES

PART A

The Contractor stipulates that such Contractor and any individual or legal entity in which the Contractor holds a ten percent or greater ownership interest and any individual or legal entity that holds a ten percent or greater ownership interest in the Contractor either (a) have no business operations in Northern Ireland, or (b) 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.

PART B

For purposes hereof, "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:

- (1) Increase the representation of individuals from underrepresented religious groups in the work force, including managerial, supervisory, administrative, clerical and technical jobs;
- (2) Take steps to promote adequate security for the protection of employees from underrepresented religious groups both at the workplace and while traveling to and from work;
- (3) Ban provocative religious or political emblems from the workplace;
- (4) Publicly advertise all job openings and make special recruitment efforts to attract applicants from underrepresented religious groups;
- (5) Establish layoff, recall and termination procedures which do not in practice favor a particular religious group;
- (6) Abolish all job reservations, apprenticeship restrictions and different employment criteria which discriminate on the basis of religion;
- (7) Develop training programs that will prepare substantial numbers of current employees from underrepresented 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 underrepresented religious groups;

- (8) Establish procedures to assess, identify and actively recruit employees from underrepresented religious groups with potential for further advancement; and
- (9) Appoint a senior management staff member to oversee affirmative action efforts and develop a timetable to ensure their full implementation.

ARTICLE II. ENFORCEMENT OF ARTICLE I

The Contractor agrees that the covenants and representations in Article I above are material conditions to this contract. In the event the contracting entity receives information that the Contractor who made the stipulation required by this rider is in violation thereof, the contracting entity shall review such information and give the Contractor an opportunity to respond. If the contracting entity finds that a violation has occurred, the contracting entity shall have the right to declare the Contractor in default and/or terminate this contract for cause and procure the supplies, services or work from another source in any manner the contracting entity deems proper. In the event of such termination, the Contractor shall pay to the contracting entity, or the contracting entity 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 contracting entity of completing performance of this contract either itself or by engaging another Contractor or Contractors. In the case of a requirements contract, the Contractor shall be liable for such difference in price for the entire amount of supplies required by the contracting entity for the uncompleted term of its contract. In the case of a construction contract, the contracting entity 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 contracting entity hereunder shall be in addition to, and not in lieu of, any rights and remedies the contracting entity has pursuant to this contract or by operation of law.

BNYDC CONSTRUCTION CONTRACT <u>EXHIBIT C</u>

LIST OF CONTRACT DRAWINGS

BNYDC CONSTRUCTION CONTRACT EXHIBIT D

SPECIFICATIONS

The specifications governing the scope of work under this contract are as follows:

[Populate or reference name and date of separate specification(s) documents.]

Specification sections issued in addenda, shall supersede the previous specifications.

BNYDC CONSTRUCTION CONTRACT <u>EXHIBIT E</u>

INTENTIONALLY OMITTED

BNYDC CONSTRUCTION CONTRACT <u>EXHIBIT F</u> <u>CONTRACTORS REQUISITION FOR PROGRESS PAYMENTS</u>

ESTIMATE FOR PARTIAL PAYMENT NO.

a.	Value of Work Completed To Date	\$
b.	Retainage	\$
c.	Net Amount Earned (a - b)	\$
d.	Amount Due for Stored Material	\$
e.	Total Amount Due This Estimate (c + d)	\$
f.	Total Previously Approved	\$
g.	Net Amount Due This Payment (e - f)	\$
h.	Less Amount Withheld by BNYDC* *Reason:	\$
		-
i.	Payment Due This Estimate (g - h)	\$
j.	Total of All Requisitions Approved to Date by BNYDC (f + i)	\$

BNYDC CONSTRUCTION CONTRACT <u>CONTRACTOR'S CERTIFICATE</u>

I/We certify that:

- a. All items, units, quantities and prices for work and material shown on this estimate are true and correct; and
- b. All work has been performed and material supplied in full compliance with the terms and conditions of the Contract to which this Certificate applies; and
- c. All contract provisions relating to prevailing wages and benefits have been complied with and payroll documentation is attached; and
- d. All outstanding claims for labor, materials and equipment for the performance of said contract have been paid in full in accordance with the requirements of the Contract; and
- e. The above Payment Due This Estimate is a true and correct as of the last day of the period covered by this **CONTRACTORS REQUISITION FOR PROGRESS PAYMENTS**.
- f. All subcontractors have been paid in full.

Signature:	Date:	
0		

Title: _____

BNYDC'S CERTIFICATE

We have verified this CONTRACTORS REQUISITION FOR PROGRESS PAYMENTS

Contract Time: _____ Cal. Days

Consumed Contract Time: _____ Cal. Days

% of Contract Completed: _____%

Signature: _____

Date: _____

Title

BNYDC APPROVAL

Payment Approval Amount: \$_____

Signature: _____

Title

BNYDC CONSTRUCTION CONTRACT <u>EXHIBIT G</u>

The following is minimum acceptable insurance coverage requirements for Contracting Services:

- I. Insurance Requirements
 - A. Commercial General Liability Policy issued on an Occurrence form with a combined single limit for Bodily Injury, Personal Injury and Property Damage of at least \$1,000,000 per occurrence and \$2,000,000 in the aggregate. Coverage shall include endorsements for: Products/Completed Operations; Underground Hazards where applicable; Contractual Liability for tort liability assumed under contract, Personal Injury; Waiver of Subrogation; Policy Aggregate shall apply on per project basis; Mobile Equipment if such equipment not subject to any motor vehicle statutory law.

Additional Insured endorsement as per Insurance Services Organization (a/k/a ISO) form CG 20 10 07 04 Additional Insured Scheduled Organization and form CG 20 37 07 04 Additional Insured – Completed Operations. Such endorsement shall include BNYDC and any other designated party as Additional Insured, as required by written contract to which this Exhibit is attached and part of.

There shall be no coverage restrictions or coverage exclusions on the General Liability Policy pertaining to, but not limited to: gravity related injuries, unsafe workplace, injuries sustained by employee of Contractor or sub-contractor, Third Party over type actions, construction operations, and construction activity.

The insurance procured by the Contractor shall be primary and non-contributory to any other insurance that may be in effect.

- B. Statutory Workers Compensation Policy and Employer's Liability Policy of minimum \$1,000,000 for work operations in State where project work is performed, including any applicable other states coverage endorsement.
- C. Automobile Liability Insurance Policy for Bodily Injury and Property Damage in the amount of \$1,000,000 per occurrence covering all owned, non-owned, hired, borrowed vehicles subject to statutory motor vehicle law.
- D. Contractors Pollution Liability policy of at least \$1,000,000 for damages arising out of bodily injury, property damages, environmental damages caused by a pollution incident from Contractors work, completed operations, or transportation whether work performed by or on behalf of Contractor.
- E. Umbrella/Excess Liability Policy of at least \$5,000,000 per occurrence. Umbrella Liability policy is to be provided on at least a follow form basis of the underlying General Liability Insurance policy, Automobile Insurance Policy, and Workers' Compensation Insurance policy. The insurance procured by the Contractor shall be primary and non- contributory to any other insurance that may be in effect.
- F. Professional Liability (Errors and Omissions) of at least \$1,000,000 each claim for wrongful acts while performing and/or providing professional services. Coverage shall continue for at least three (3) years beyond the final performance of services.
- G. The following are to be included as additional insured(s) for coverage required in sections A,C,D and E. Each additional insured listed below shall be issued a separate Certificate of Insurance.

Certificate Holder

Brooklyn Navy Yard Development Corporation Building 77 141 Flushing Avenue, Suite 801 Brooklyn, New York 11205

And as Additional Insureds Brooklyn Navy Yard Development Corporation City of New York

Certificate Holder

City of New York c/o City of New York Department of Small Business Services One Liberty Plaza, 165 Broadway New York, NY 10006

And as Additional Insureds City of New York Brooklyn Navy Yard Development Corporation

- H. A Certificate of insurance using the ACCORD 25 form is to be provided to the Additional Insured and the Certificate must specifically include a copy of the stipulated additional insured endorsement as required in Section A. Certificate Holder must be notified of any cancellation, non-renewal or material modification of existing policy. Notice is to be received 30 days prior to any change in status. In addition to ACCORD 25 form, a completed New York Construction Certificate of Liability Insurance Addendum (ACCORD 855 form) shall be provided.
- II. If the Contractor utilizes the services of subcontractor for work performed, the same provisions of this Insurance Requirement Exhibit shall be required of those parties. It is the sole responsibility of the Contractor to maintain compliance of such.
- III. Insurance coverage shall be maintained with responsible insurance companies licensed and admitted to do business in the State of New York and such companies shall have an A.M.Best Rating of A- VII. If a Non-Admitted Insurance Company is used, an AM Best rating of A- shall apply.
- IV. Any self-insured insurance retentions and, or any deductibles utilized on any of the above required insurance coverage is the sole responsibility of the Contractor, and Contractor agrees to satisfy those retention and or deductible obligations directly with their insurance company.
- V. The policies required hereunder shall contain the following provisions:

"A. Notices from the insurer (the "Insurer") to BNYDC ("BNYDC") and the City of New York (the "City"), in connection with this policy, shall be addressed to the General Counsel, BNYDC, at Building 77, 141 Flushing Avenue, Suite 801, Brooklyn, New York 11205 (with a copy to BNYDC's Deputy General Counsel at the same address);

B. The Insurer shall accept notice of accident from BNYDC or the City, within 120 days after receipt by an official of such Additional Insured (as identified above) of notice of such accident as valid and timely notice under this policy;

C. The Insurer shall accept notice of claim from the City within 120 days after such claim has been filed with the Comptroller of the City and notice of claim from BNYDC, within 120 days after receipt by such party as valid and timely notice under this policy;

The Insurer understands and agrees that notice of accident or claim to such Insurer by any one of the following entities shall be deemed notice by all under the policy: Contractor; or BNYDC; or The City; or Any other Additional Insured.

E. This policy shall not be canceled, terminated or modified by the Insurer or Contractor unless 30 days prior written notice is sent by registered mail to BNYDC or the City, nor shall this policy be canceled, terminated or modified by the Contractor without prior written consent of BNYDC;

F. The presence of engineers, inspectors or other employees or agents of Contractor, BNYDC or the City at the site of the Services performed by Contractor shall not invalidate this policy of insurance;

G. Violation of any of the terms of any other policy issued by the Insurer to Contractor or a subcontractor of Contractor shall not invalidate this policy; and

H. Insurance, if any, carried by BNYDC, the City or the Additional Insureds will not be called upon to contribute to a loss that would otherwise be paid by the Insurer."

BNYDC CONSTRUCTION CONTRACT <u>EXHIBIT H</u> PERFORMANCE AND PAYMENT BONDS

Form of Performance Bond

KNOW ALL MEN BY THESE PRESENTS, that____

(hereinafter called the "Principal") and _______ a corporation organized and existing under the laws of the State of ______ (hereinafter called the "Surety"), as Surety, are held and firmly bound unto the Brooklyn Navy Yard Development Corporation the City of New York and The City of New York Department of Small Business Services (hereinafter collectively called the "Obligee") in the sum of ______ Dollars (\$______) for the payment of which sum well and truly to be made, the said Principal and Surety bind themselves, and their respective heirs, administrators, executors, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, Principal and Obligee, have entered into Construction Contract Number _____ dated _____ (hereinafter referred to as "Construction Contract".

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION IS SUCH, that if the above bounden Principal shall:

A. Well and truly perform all the undertakings, covenants, terms, conditions, and agreements of said Construction Contract within the time provided therein and any extensions thereof that may be granted by the Obligee, and during the life of any guaranty required under said Contract; and

B. Shall also well and truly perform all the undertakings, covenants, terms, conditions, and agreements of any and all duly authorized modifications of said Contract that may hereafter be made; and
C. Shall as required by the Construction Contract indemnify and save harmless Obligee from any and all loss, damage, fines, penalties and/or expense including costs and attorney's fees, which the said Obligee may sustain;

Then this obligation shall be null and void; otherwise it shall remain in full force and effect.

Surety agrees that no change, extension of time, alteration, addition, omission, or other modification of the terms of either the said Construction Contract or in the said Work to be performed thereunder, or in the specifications thereunder, or in the plans

thereunder, shall in anyway affect Surety's obligation on this Bond, and Surety does hereby waive notice of any such changes, extensions of time, alterations, additions, omissions, and other modifications.

The Surety, for value received, agrees, if requested to do so by the Obligee, to perform fully and complete the obligations of the Principal mentioned and described in said Construction Contract and any and all modifications thereof pursuant to and in accordance with the undertakings, covenants, terms, conditions and agreements thereof, if the Principal fails, neglects and/or refuses to so perform fully and completely said obligations, and further agrees to commence the performance and completion of said obligations within twenty (20) days after notice from the Obligee of such failure, neglect and/or refusal of the Principal and to perform and complete the same within the time required under said Contract and any and all modifications thereof as extended by the period of time elapsing between the date of such failure, neglect and/or refusal of the Principal and the date of the giving of such notice by the Obligee to the Surety.

Anything contained herein to the contrary notwithstanding, the Surety hereby agrees that a payment or payments made by the Obligee to the Principal which may be at variance with the terms of said contract or any other act of the Obligee which is at variance with, or in violation of, the terms of said contract, shall not serve to release the Surety from its obligations hereunder, in whole or in part, it being the intent of this bond that the Surety's obligations to complete shall be absolute and that any disputes relating to the performance of said contract shall be disposed of at a later date and without interference in, or with the performance of, said Construction Contract.

IN WITNESS WHEREOF, the above bounden parties have executed this instrument under their several seals this ____ day of _____20__ the name and corporate seal of each corporate party being hereto affixed and these presents duly signed by its undersigned representative, pursuant to authority of its governing body.

PRINCIPAL		(Seal)
	(Name)	· · ·
Attest:		
Secretary	(Business Address)	
	Ву:	
	(Signature)	
	Name:	
CONSTRUCTION CONTRACT NUM	MBER[]	
CONTRACTOR []		Page

Title:

SURETY	(Seal)
	(Name)
Attest:	
Secretary (Business Address)	(Business Address)
(,	By:
	By: (Signature)
	Name:
	Title:
ACK	NOWLEDGMENT OF SURETY
STATE OF)	
	SS.:
COUNTY OF)	
On thisday of _	in the year 20_ before me personally came to me known, who being by me duly
sworn, did depose and say that	he is theof
	, the
seal of said corporation; that th	which executed the above instrument; that he knows the e seal affixed to said instrument is such seal; that it was l of Directors of said corporation and that he signed his
	Notary Public (SEAL)
ACKNOWLEDGN	IENT OF PRINCIPAL, IF AN INDIVIDUAL

STATE OF)		
COUNTY OF_)	SS.:	
On this	day of		in the year 20_ before me personally came to me known and to be the person
CONSTRUCTION	CONTRACT NUMBER []	Page 69 of 95

described in and who executed the foregoing instrument and __he duly acknowledged that he executed the same.

Notary Public (SEAL)

ACKNOWLEDGMENT OF PRINCIPAL, IF A PARTNERSHIP

ss.:

STATE OF_____)

COUNTY OF_____)

On this day of	_ in the year 20_ before me personally came
	to me known and known to me to be
a partner of the firm of	described in and who
executed the foregoing instrument, and he	duly acknowledged to me that he executed
the same for an in behalf of said firm.	

Notary Public (SEAL)	
ACKNOWLEDGMENT OF PRINCIPAL IF A CORPORATION	

ss.:

STATE OF_____)

COUNTY OF_____)

On thisday of	in the year 20_ before me personally ca	me
	to me known, who being by me	e duly
sworn, did depose and say that	he is the	of
		, the

corporation described in and which executed the above instrument; that __he knows the seal of said corporation; that the seal affixed to said instrument is such seal; that it was so affixed by order of the Board of Directors of said corporation and that __he signed his name thereto by like order.

Notary Public (SEAL)

CONSTRUCTION CONTRACT NUMBER [___]
CONTRACTOR [____]

Page 70 of 95

ACKNOWLEDGMENT OF PRINCIPAL IF A LIMITED LIABILITY COMPANY

STATE OF_____)

COUNTY OF_____)

On this ______ day of ______ in the year 20_ before me personally came

me known, who being by me duly sworn, did depose and say that _he is a member of_____

ss.:

the limited liability company described in and which executed the above instrument; that __he knows the seal of said limited liability company; that the seal affixed to said instrument is such seal; that it was so affixed by order of the Members of said limited liability company and that __he signed his name thereto by like order.

Notary Public (SEAL)

to

Form of Payment Bond

WHEREAS, Principal and Obligee, have entered into Construction Contract Number _____ dated _____ (hereinafter referred to as "Construction Contract".

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION IS SUCH, that if the above bounden Principal shall promptly pay all persons having just claims for:

- A. Labor, materials, services, insurance, supplies, machinery, equipment, rentals, fuels, oils, implements, tools and/or appliances and all other items of whatever nature, furnished for, used or consumed in the prosecution of the Work called for by said Construction Contract and any and all modifications thereof, whether lienable or non-lienable and whether or not permanently incorporated in said work; and
- B. Pension, welfare, vacation and/or other supplemental employee benefit contributions payable under collective bargaining agreements with respect to persons employed upon said Work; and
- C. All federal, state and local taxes and/or contributions required by law to be withheld and/or paid with respect to the employment of persons upon said work;

then this obligation shall be null and void; otherwise it shall remain in full force and effect.

Surety agrees that no change, extension of time, alteration, addition, omission, or other modification of the terms of either the said Construction Contract or in the said Work to be performed thereunder, or in the specifications thereunder, or in the plans thereunder, shall in anyway affect Surety's obligation on this Bond, and Surety does hereby waive notice of any such changes, extensions of time, alterations, additions, omissions, and other modifications.

Principal and Surety agree that this Bond inures to the benefit of all persons supplying labor and material in the prosecution of the Work provided for in said Construction Contract, as well as to the Obligee, and that such persons may maintain independent actions upon this Bond in their own names.

IN WITNESS WHEREOF, the above bounden parties have executed this instrument under their several seals this _____ day of _____ 20_ the name and corporate seal of each corporate party being hereto affixed and these presents duly signed by its undersigned representative, pursuant to authority of its governing body.

PRINCIPAL		(Seal)
	(Name)	
Attest:		
Secretary	(Business Address)	
	Ву:	
	(Signature)	
	Name:	
	Title:	
SURETY		(Seal)
	(Name)	
Attest:		
Secretary (Business Address)	(Business Address)	
(By:	
	(Signature)	
	Name:	
	Title:	

ACKNOWLEDGMENT OF SURETY

BNYDC CONSTR	UCTION CONTRACT
STATE OF)	
ss.: COUNTY OF)	
On thisday of in t	the year 20 before me personally came to me known, who being by me duly
sworn, did depose and say that _he is the	eof
seal of said corporation; that the seal affir	, the uted the above instrument; that he knows the xed to said instrument is such seal; that it was fors of said corporation and that he signed his
	Notary Public (SEAL)
ACKNOWLEDGMENT OF	PRINCIPAL, IF AN INDIVIDUAL
STATE OF)	
SS.: COUNTY OF)	
On this day of came person described in and who executed th acknowledged that he executed the same	e foregoing instrument andhe duly
	Notary Public (SEAL)
ACKNOWLEDGMENT OF STATE OF) ss.:	PRINCIPAL, IF A PARTNERSHIP
COUNTY OF)	
	in the year 20 before me personally came to me known and known to me to be
	described in and who
CONSTRUCTION CONTRACT NUMBER [] CONTRACTOR []	Page 74 of 95

executed the foregoing instrument, and he duly acknowledged to me that he executed the same for an in behalf of said firm.

Notary Public (SEAL)

ACKNOWLEDGMENT OF PRINCIPAL IF A CORPORATION

ss.:

ss.:

STATE OF_____)

COUNTY OF_____)

On thisday of in the	e year 20 before me personally came
	to me known, who being by me duly
sworn, did depose and say that _he is the _	of
	, the
corporation described in and which execute	ed the above instrument; thathe knows the
seal of said corporation; that the seal affixed	l to said instrument is such seal; that it was

seal of said corporation; that the seal affixed to said instrument is such seal; that it was so affixed by order of the Board of Directors of said corporation and that __he signed his name thereto by like order.

Notary Public (SEAL) ACKNOWLEDGMENT OF PRINCIPAL IF A LIMITED LIABILITY COMPANY

STATE OF_____)

COUNTY OF_____)

On this ______ day of ______ in the year 20___ before me personally came

to

me known, who being by me duly sworn, did depose and say that _he is a member of_____

the limited liability company described in and which executed the above instrument; that __he knows the seal of said limited liability company; that the seal affixed to said instrument is such seal; that it was so affixed by order of the Members of said limited liability company and that __he signed his name thereto by like order.

Notary Public (SEAL)

BNYDC CONSTRUCTION CONTRACT <u>EXHIBIT I</u> PARTIAL RELEASE AND PARTIAL LIEN WAIVER

OWNER: BROOKLYN NAVY YARD DEVELOPMENT CORPORATION and THE CITY OF NEW YORK

PROJECT:

CONTRACTOR: _____

CONTRACTOR, in consideration of the current payment of \$______, a portion of the current total contract value of \$______, the current payment bringing the total of all payments to date to \$______, in addition to which retainage of ____% is withheld as Maintenance and Guarantee per the contract terms, the execution of this Partial Release and Partial Lien Waiver, receipt of which is hereby acknowledged, represents that it has been paid to the date hereof in full for all labor, services, equipment, or material furnished to **OWNER** on the **PROJECT** including extra work claims and does hereby forever release **OWNER** from any and all claims that **CONTRACTOR** may have against **OWNER** arising to the date hereof from the **PROJECT**.

OWNER'S NOTICE: THIS DOCUMENT WAIVES CONTRACTOR'S RIGHTS UNCONDITIONALLY AND STATES THAT CONTRACTOR HAS BEEN PAID FOR GIVING UP THOSE RIGHTS. THIS DOCUMENT IS ENFORCEABLE AGAINST CONTACTOR IF CONTRACTOR SIGNS IT, EVEN IF CONTRACTOR HAS NOT BEEN PAID. IF CONTRACTOR HAS NOT BEEN PAID, USE A CONDITIONAL RELEASE FORM.

CONTRACTOR: Acknowledges that it is not permitted to file any mechanic's lien against land and improvements owned by **OWNER** and Warrants that it will not file a mechanic's lien or other lien against land and improvements owned by **OWNER** and has not and will not assign any claims for payment or right to perfect a lien against such land and improvements.

CONTRACTOR: Warrants and represents that (1) All workmen employed by it or its subcontractor upon this **PROJECT** have been paid applicable prevailing wages and in full to the date hereof; 2) All material men from which the undersigned or its subcontractors have purchased materials used in the **PROJECT** have been paid in full for materials delivered on or prior to the date hereof; (3) All union fringe benefits, dues or

other obligations have been paid in full on or prior to the date hereof; (4) None of such workman and material men has any claim or demand or right of lien against the land and improvements owned by OWNER; and (5) Represents that the signatory hereto is an authorized officer of **CONTRACTOR** with full power to execute this Final Release and Final Lien Waiver.

In addition to the rights and obligations provided by the Contract for the **PROJECT** (which is incorporated herein by reference and made a part hereof), to the fullest extent permitted by law, the undersigned further agrees to defend, indemnify and hold **OWNER**, its successors and assigns, harmless from all claims, actions, and liens filed by the undersigned's subcontractors, suppliers, material men, and laborers, and those interposed by labor organizations for union fringe benefits and/or other union dues or responsibilities, who performed labor or furnished materials in connection with the work performed to the date hereof at the **PROJECT**.

CONTRACTOR agrees that the **OWNER**, any lender and any title insurer may rely upon this waiver.

In witness whereof, we have here to set our hand and seal this _____ day of ______ 20___.

CONTRACTOR

BY: _____

Title: _____

STATE OF NEW YORK)

COUNTY OF_____)

On the _____day of _____ 20__ before me personally came _____, personally known to me or proved to me on the basis of satisfactory evidence to be the individual whose name is subscribed to the within instrument and acknowledged to me that _he executed the same.

NOTARY PUBLIC

ss:

STATE OF NEW YORK)

SS: COUNTY OF _____)

On the ____ day of ____, 20__ before me personally came _____, to me known, who, being by me duly sworn, did depose and say that he resides at _____; that he is the ______ of _____ the business described in and which executed the above instrument; and that he signed his name thereto by authority of the Board of Directors of said corporation.

NOTARY PUBLIC

BNYDC CONSTRUCTION CONTRACT <u>EXHIBIT J</u> FINAL RELEASE AND FINAL LIEN WAIVER

OWNER: BROOKLYN NAVY YARD DEVELOPMENT CORPORATION and THE CITY OF NEW YORK

PROJECT:

CONTRACTOR: _____

CONTRACTOR in consideration of the current payment of \$______, being the final payment for a total contract value of \$______, receipt of which is hereby acknowledged, represents that it has been paid in full for all labor, services, equipment, or material furnished to **OWNER** on the **PROJECT** including extra work claims and does hereby forever release **OWNER** from any and all claims that **CONTRACTOR** may have against **OWNER** arising from the **PROJECT**.

OWNER'S NOTICE: THIS DOCUMENT WAIVES CONTRACTOR'S RIGHTS UNCONDITIONALLY AND STATES THAT CONTRACTOR HAS BEEN PAID FOR GIVING UP THOSE RIGHTS. THIS DOCUMENT IS ENFORCEABLE AGAINST CONTACTOR IF CONTRACTOR SIGNS IT, EVEN IF CONTRACTOR HAS NOT BEEN PAID. IF CONTRACTOR HAS NOT BEEN PAID, USE A CONDITIONAL RELEASE FORM.

CONTRACTOR: Acknowledges that it is not permitted to file any mechanic's lien against land and improvements owned by **OWNER** and Warrants that it will not file a mechanic's lien or other lien against land and improvements owned by **OWNER** and has not and will not assign any claims for payment or right to perfect a lien against such land and improvements.

CONTRACTOR: Warrants and represents that (1) All workmen employed by it or its subcontractor upon this **PROJECT** have been paid applicable prevailing wages and in full to the date hereof; 2) All material men from which the undersigned or its subcontractors have purchased materials used in the PROJECT have been paid in full for materials delivered on or prior to the date hereof; (3) All union fringe benefits, dues or other obligations have been paid in full on or prior to the date hereof; (4) None of such workman and material men has any claim or demand or right of lien against the land and improvements owned by OWNER; and (5) Represents that the signatory hereto is an

authorized officer of **CONTRACTOR** with full power to execute this Final Release and Final Lien Waiver.

In addition to the rights and obligations provided by the Contract for the **PROJECT** (which is incorporated herein by reference and made a part hereof), to the fullest extent permitted by law, the undersigned further agrees to defend, indemnify and hold **OWNER**, its successors and assigns, harmless from all claims, actions, and liens filed by the undersigned's subcontractors, suppliers, material men, and laborers, and those interposed by labor organizations for union fringe benefits and/or other union dues or responsibilities, who performed labor or furnished materials in connection with the work performed at the **PROJECT**.

CONTRACTOR agrees that the **OWNER**, any lender and any title insurer may rely upon this waiver.

In witness whereof, we have here to set our hand and seal this _____ day of ______ 20___.

CONTRACTOR

BY: _____

Title: _____

STATE OF NEW YORK)

SS: COUNTY OF _____)

On the _____day of _____ 20__ before me personally came _____, personally known to me or proved to me on the basis of satisfactory evidence to be the individual whose name is subscribed to the within instrument and acknowledged to me that _he executed the same.

NOTARY PUBLIC

STATE OF NEW YORK)

SS: COUNTY OF _____)

On the ____ day of ____, 20__ before me personally came _____, to me known, who, being by me duly sworn, did depose and say that he resides at _____; that he is the ______ of ______ the business described in and which executed the above instrument; and that he signed his name thereto by authority of the Board of Directors of said corporation.

NOTARY PUBLIC

BNYDC CONSTRUCTION CONTRACT <u>EXHIBIT K</u>

WHISTLEBLOWER PROTECTION EXPANSION ACT

1. In accordance with Local Law Nos. 30-2012 and 33-2012, codified at sections 6-132 and 12-113 of the New York City Administrative Code, respectively,

- (a) Contractor shall not take an adverse personnel action with respect to an officer or employee in retaliation for such officer or employee making a report of information concerning conduct which such officer or employee knows or reasonably believes to involve corruption, criminal activity, conflict of interest, gross mismanagement or abuse of authority by any officer or employee relating to this Contract to (i) the Commissioner of the Department of Investigation, (ii) a member of the New York City Council, the Public Advocate, or the Comptroller, or (iii) the City Chief Procurement Officer, ACCO, Agency head, or Commissioner.
- (b) If any of Contractor's officers or employees believes that he or she has been the subject of an adverse personnel action in violation of subparagraph (a) of paragraph 1 of this rider, he or she shall be entitled to bring a cause of action against Contractor to recover all relief necessary to make him or her whole. Such relief may include but is not limited to: (i) an injunction to restrain continued retaliation, (ii) reinstatement to the position such employee would have had but for the retaliation or to an equivalent position, (iii) reinstatement of full fringe benefits and seniority rights, (iv) payment of two times back pay, plus interest, and (v) compensation for any special damages sustained as a result of the retaliation, including litigation costs and reasonable attorney's fees.
- (c) Contractor shall post a notice provided by the City in a prominent and accessible place on any site where work pursuant to the Contract is performed that contains information about:
 - (i) how its employees can report to the New York City Department of Investigation allegations of fraud, false claims, criminality or corruption arising out of or in connection with the Contract; and
 - (ii) the rights and remedies afforded to its employees under New York City Administrative Code sections 7-805 (the New York City False Claims Act) and 12-113 (the Whistleblower Protection Expansion Act) for lawful acts taken in connection with the reporting of allegations of fraud, false claims, criminality or corruption in connection with the Contract.
- (d) For the purposes of this rider, "adverse personnel action" includes dismissal, demotion, suspension, disciplinary action, negative performance evaluation,

any action resulting in loss of staff, office space, equipment or other benefit, failure to appoint, failure to promote, or any transfer or assignment or failure to transfer or assign against the wishes of the affected officer or employee.

(e) This rider is applicable to all of Contractor's subcontractors having subcontracts with a value in excess of \$100,000; accordingly, Contractor shall include this rider in all subcontracts with a value a value in excess of \$100,000.

2. Paragraph 1 is not applicable to this Contract if it is valued at \$100,000 or less. Subparagraphs (a), (b), (d), and (e) of paragraph 1 are not applicable to this Contract if it was solicited pursuant to a finding of an emergency. Subparagraph (c) of paragraph 1 is neither applicable to this Contract if it was solicited prior to October 18, 2012 nor if it is a renewal of a contract executed prior to October 18, 2012.



BNYDC CONSTRUCTION CONTRACT <u>EXHIBIT L</u>

PAID SICK LEAVE LAW

Introduction and General Provisions

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.1 Contractors of the City of New York or of other governmental entities may be required to provide sick time pursuant to the PSLL.

1 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.

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").

Contractor agrees to comply in all respects with the PSLL and the Rules, and as amended, if applicable, in the performance of this agreement. Contractor further acknowledges that such compliance is a material term of this agreement and that failure to comply with the PSLL in performance of this agreement may result in its termination.

Contractor must notify the Agency Chief Contracting Officer of the City agency or other entity 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 agreement. Additionally, 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.

The PSLL is summarized below for the convenience of Contractor. 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 Contractor can get more information about how to comply with the PSLL. Contractor acknowledges that it is responsible for compliance with the PSLL notwithstanding any inconsistent language contained herein.

Pursuant to the PSLL and the Rules:

Applicability, Accrual, and Use

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 CONSTRUCTION CONTRACT NUMBER [__]
CONTRACTOR [____] Page 86 of 95

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 forty hours of sick time to an employee in any Year.

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 forty 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.

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

• 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;

• 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;

• closure of such employee's place of business by order of a public official due to a public health emergency; or

• such employee's need to care for a child whose school or childcare provider has been closed due to a public health emergency.

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.

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.

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.

Exemptions and Exceptions

Notwithstanding the above, the PSLL does not apply to any of the following:

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

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

• 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;

• 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;

• 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;

• an employee in a work study program under Section 2753 of Chapter 42 of the United States Code;

• 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

• a participant in a Work Experience Program (WEP) under section 336-c of the New York State Social Services Law.

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.

Notice of Rights

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.

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.

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.

Enforcement and Penalties

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.

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.

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, CONSTRUCTION CONTRACT NUMBER [___] Page 89 of 95

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.

BNYDC CONSTRUCTION CONTRACT [EXHIBIT M EXCAVATION WORK PLAN]

BNYDC CONSTRUCTION CONTRACT <u>[EXHIBIT N</u> <u>HEALTH AND SAFETY PLAN]</u>

BNYDC CONSTRUCTION CONTRACT <u>EXHIBIT O</u> <u>FEMA RIDERS</u>

BNYDC CONSTRUCTION CONTRACT <u>EXHIBIT P</u> <u>M/WBE UTILIZATION PLAN</u>

BNYDC CONSTRUCTION CONTRACT <u>EXHIBIT Q</u> <u>COST BREAKDOWN</u>



Brooklyn Navy Yard Development Corporation BrooklynNavyYard.org

Building 77 141 Flushing Ave, Suite 801 Brooklyn, NY 11205

[EXHIBIT I ENVIRONMENTAL CERTIFICATION FORM]

[to attach]

CONTRACTOR EXCAVATION WORK PLAN CERTIFICATION BNYDC VCP Site V00120

Project Name:	
Project Location:	
Contractor Name:	
Contractor Point of Contact:	
Contractor POC Phone & Email:	

I, _____, certify that I have reviewed the following NYSDEC approved Site (Print name)

Management Plan (SMP) documents for the Brooklyn Navy Yard (BNY) and will complete all Site work in accordance with the requirements set forth in these plans [*Check to confirm and certify that documents have been received and reviewed*]:

- □ Site Management Plan (SMP)
- □ Excavation Work Plan (EWP)
- □ Health And Safety Plan (HASP)
- Community Air Monitoring Plan (CAMP)

Additionally, as the contractor's responsible party, I certify that: [Check all that apply]

- A. All employees engaged in Site work at the BNY have obtained an OSHA HAZWOPER 40-hour Certification.
- B.
 A Request to Import/Reuse Fill or Soil form, has been prepared by the contractor and submitted to the BNY and CORE Environmental Consultants, Inc. (CORE).
 AND
 - All imported material(s) meets the backfill and cover soil quality standards established in 6 NYCRR 375-6.7(d).
- C. \Box No backfill is being imported to the site.
- D. CORE and BNY will be notified of scheduled work dates to ensure CORE is on Site to provide a Qualified Environmental Professional (QEP) to perform CAMP.
- E.
 The reconstruction of the Site-wide cover will include a concrete or paving system at a minimum of 6" in thickness.

Date





Brooklyn Navy Yard Development Corporation BrooklynNavyYard.org

Building 77 141 Flushing Ave, Suite 801 Brooklyn, NY 11205

[EXHIBIT J

EXCAVATION WORK PLAN (EWP)

HEALTH AND SAFETY PLAN (HASP)

COMMUNITY AIR MONITORING PLAN (CAMP)

EWP, HASP and CAMP are excerpted from the Site Management Plan (SMP) Exhibit K. Bidders must comply with all requirements.]

[to attach]

APPENDIX E Excavation Work Plan



This Excavation Work Plan (EWP) contains procedures for potential future soil disturbances at the Site, including renovation, below-grade utility line repair, and new construction.

E.1 NOTIFICATION

At least 15 days prior to the start of any activity that is anticipated to breach the Site-wide protective cover as defined in Section 2.6 of the Site Management Plan (SMP), the Site owner or their representative will notify the NYSDEC. Currently, this notification will be made to:

Jonathan Greco NYSDEC Project Manager 625 Broadway Albany, New York 12233 (518) 402-9694 Jonathan.Greco@dec.ny.gov

This notification will include:

- A detailed description of the work to be performed, including the location and aerial extent of excavation, plans/drawings for Site re-grading, intrusive elements or utilities to be installed below the soil cover, estimated volumes of impacted soil to be excavated, and any work that may impact an engineering control (EC);
- A summary of environmental conditions anticipated to be encountered in the work areas including the nature and concentration levels of constituents of concern, potential presence of grossly impacted media, and plans for any pre-construction sampling;
- A schedule detailing the start and completion of all intrusive work;
- A summary of the applicable components of this EWP;
- A statement that the work will be performed in compliance with this EWP and Title 29 of the Code of Federal Regulations Part 1910.120 (29 CFR 1910.120);
- A copy of the contractor's Health and Safety Plan (HASP), in electronic format, if it differs from the HASP provided in Appendix F of the Site Management Plan (SMP);
- Identification of disposal facilities for potential waste streams; and
- Identification of sources of any anticipated backfill, along with all required chemical testing results.

Tenant Notification Requirements

Tenants who wish to disturb the existing Site-wide cover (as defined in Section 2.6 of the SMP) must notify BNYDC in advance of such activities at least 90 days in advance. A project-specific Work Plan will be provided to BNYDC by the tenant describing soil disturbance activities and will



include figures identifying the area(s) to be disturbed. The Change of Use request must include the NYSDEC 60-Day Advance Notification of Site Change of Use, Transfer or Certificate of Completion, and/or Ownership form found at

http://www.dec.ny.gov/docs/remediation_hudson_pdf/changeofuse.pdf or in Appendix H of the SMP. BNYDC will review the Change of Use request and submit to NYSDEC.

E.2 SITE SECURITY

Site Security will be utilized to prevent access to the Site and vandalism or destruction of construction equipment, and to minimize health and safety concerns for surrounding properties. Currently the majority of the Site is covered by buildings, concrete, asphalt pavement, and/or millings, with some vegetated areas/landscaping.

In the event of any excavations or building demolitions, the area of excavation will be surrounded with an 8-foot security fence with a minimum of one gate that can be locked at the end of each working day. The fence will encompass the excavation, equipment, and soil storage areas, if any.

E.3 SOIL SCREENING METHODS

Visual, olfactory and instrument-based (e.g. photoionization detector) soil screening will be performed by a qualified environmental professional (QEP) during all excavations into known or potentially impacted material (remaining contamination). Soil screening will be performed when invasive work is done and will include all excavation and invasive work performed during development, such as excavations for foundations and utility work, after issuance of the No Further Action (NFA) letter.

Soils not exhibiting obvious signs of impacts may be reused on Site as backfill beneath a remedycompliant cover comprised of at least 12 inches of soil meeting the lower of the NYSDEC Title 6 of the New York Codes, Rules and Regulations Part 375 (6 NYCRR 375) Commercial Use and Protection of Groundwater Soil Cleanup Objectives (SCOs), a building, or concrete, asphalt, or millings at least 6 inches in thickness. Soils exhibiting visual or olfactory evidence of impacts will be segregated for characterization and potential off-Site disposal.

Further discussion of off-Site disposal of materials and on-Site reuse is provided in Sections E.7 and E.8 of this Appendix.

E.4 SOIL STAGING METHODS

Any soils disturbed during excavation will be stockpiled in an on-Site staging area. Soil will be segregated into stockpiles based on screening performed as discussed in Section E.3 of this Appendix. Soil stockpiles will be continuously encircled with a berm and/or silt fence. Hay bales will be used as needed near catch basins, surface waters, and other discharge points.



Stockpiles will be kept covered at all times with appropriately anchored tarps. Stockpiles will be routinely inspected and damaged tarp covers will be promptly replaced. Stockpiles will be inspected at a minimum once each week and after every storm event. Results of inspections will be recorded in a logbook maintained at the Site and will be made available for inspection by NYSDEC upon request.

E.5 MATERIALS EXCAVATION AND LOAD-OUT

A QEP or person under their supervision will oversee all invasive work and excavation and load-out of all material not suitable for reuse. The owner or lessee of the property and its contractors are responsible for safe execution of all invasive and other work performed under this EWP.

The presence of utilities and easements on the Site will be investigated by a QEP. It will be determined whether a risk or impediment to the planned work under this SMP is posed by utilities or easements on the Site.

Loaded vehicles leaving the Site will be appropriately lined, tarped, securely covered, manifested, and placarded in accordance with appropriate federal, state, local, and NYSDOT requirements (and all other applicable transportation requirements).

A truck wash will be operated on-Site, as appropriate. The QEP will be responsible for ensuring that all outbound trucks will be washed at the truck wash before leaving the Site until the activities performed under this section are complete. Truck wash waters will be collected and disposed of off-Site in an appropriate manner.

Locations where vehicles enter or exit the Site shall be inspected daily for evidence of off-Site soil tracking. The QEP will be responsible for ensuring that all egress points for truck and equipment transport from the Site are clean of dirt and other materials derived from the Site during intrusive excavation activities. Adjacent streets will be cleaned as needed in order to maintain a clean condition with respect to Site-derived materials.

E.6 MATERIALS TRANSPORT OFF-SITE

All materials transport will be performed by licensed haulers in accordance with appropriate federal, state, and local regulations, including 6 NYCRR 364. Haulers will be appropriately licensed and trucks properly placarded.

Material will be transported by trucks equipped with tight-fitting covers. Loose-fitting canvas-type truck covers will be prohibited. If loads contain wet material capable of producing free liquid, truck liners will be used.

Truck transport routes will be developed for each project performed at the Site. This will allow the most efficient truck route with the least disturbance to remaining occupants of the Brooklyn Navy



Yard Industrial Park (BNYIP). All trucks loaded with Site materials will exit the vicinity of the Site using only these approved truck routes. The most appropriate route for each project will take into account: (a) limiting transport through residential areas and past sensitive sites; (b) use of New York City-mapped truck routes; (c) prohibiting off-Site queuing of trucks entering the Site; (d) limiting total distance to major highways; (e) promoting safety in access to highways; and (f) overall safety in transport.

Trucks will be prohibited from stopping and idling in the neighborhood outside the project Site. Off-Site queuing will be prohibited.

E.7 MATERIALS DISPOSAL OFF-SITE

All material removed from the Site will be treated as contaminated and regulated material and will be transported and disposed of in accordance with all federal, state (including 6 NYCRR 360), and local regulations. If disposal of material from this Site is proposed for unregulated off-Site disposal (i.e. clean soil removed for development purposes), a formal request, with an associated plan, will be made to NYSDEC. Unregulated off-Site management of materials from this Site will not occur without formal NYSDEC approval.

Off-Site disposal locations for excavated soils will be identified in the pre-excavation notification. This will include estimated quantities and a breakdown of disposal facility by class, if appropriate i.e., hazardous waste disposal facility, solid waste landfill, petroleum treatment facility, construction/demolition (C/D) recycling facility, etc. Actual disposal quantities and associated documentation will be reported to NYSDEC in the Periodic Review Report (PRR). This documentation will include: waste profiles, test results, facility acceptance letters, manifests, bills of lading, and facility receipts.

Non-hazardous historic fill and impacted soils taken off-Site will be handled, at minimum, as a Municipal Solid Waste per 6 NYCRR 360-1.2. Material that does not meet Part 375 Unrestricted Use SCOs is prohibited from being taken to a New York State recycling facility (6 NYCRR 360-16 Registration Facility).

E.8 MATERIALS REUSE ON-SITE

Excavated soils will be considered appropriate for reuse as on-Site backfill if the soil does not exhibit obvious signs of impacts. Soils not exhibiting obvious signs of impacts may be reused on Site as backfill beneath a remedy-compliant cover comprised of at least 12 inches of soil meeting the lower of NYSDEC Commercial Use and Protection of Groundwater SCOs as set forth in 6 NYCRR 375-6.8(b), a building, or concrete, asphalt, or millings at least 6 inches in thickness. Soils exhibiting obvious signs of impacts must be sampled prior to reuse below the Site-wide cover and must meet the lower of the Commercial Use and Protection of Groundwater SCOs and the Standards, Criteria, and Guidance (SCGs) set forth in Table 5.4(e)4 of *DER Technical Guidance for*



Site Investigation and Remediation (DER-10), included at the end of this Section. Soil will be stockpiled in accordance with Sections E.3 and E.4 of this EWP.

The QEP will ensure that procedures defined for materials reuse in the SMP are followed and that unacceptable material does not remain on-Site. Impacted on-Site material, including historic fill and impacted soil, that is acceptable for reuse on-Site will be placed below the demarcation layer or impervious surface, and will not be reused within a cover soil layer, within landscaping berms, or as backfill for subsurface utility lines.

Any demolition material proposed for reuse on-Site will be sampled for asbestos and the results will be reported to NYSDEC for acceptance. Concrete crushing or processing on-Site will not be performed without prior NYSDEC approval. Organic matter (wood, roots, stumps, etc.) or other solid waste derived from clearing and grubbing generated during Site redevelopment and/or remedial work will not be reused on Site.

Table 5.4(e)4 Reuse of Soil			
Soil on the Site Meets:	Reuse on the Site:	Off-site Export & Reuse:	
Unrestricted Soil SCGs	Without restrictions	Without restrictions	
Meets the Applicable Use-based and Groundwater Protection SCG and where Appropriate Protection of Ecological Resources Soil SCGs for a Site w/ an Institutional Control (IC) & SMP.	In the soil cover/cap or as backfill within the area of the site subject to the IC.	Not Allowed, unless going to a site with IC subject to a 6 NYCRR 360 Beneficial Use Determination (BUD).	
Meets Site-Specific Background Soil Levels.	Without restrictions. (Does not apply to sites in the BCP.)	Not Allowed, unless going to a site with IC subject to a 6 NYCRR 360 BUD.	
Site-specific cleanup goals for subsurface soil	Placement below the soil cover/cap within the area of the site subject to the IC.	Not Allowed, unless going to a site with IC subject to a 6 NYCRR 360 BUD.	

E.9 FLUIDS MANAGEMENT

All liquids to be removed from the Site including, but not limited to, excavation dewatering, decontamination waters, and groundwater monitoring well purge and development waters, will be handled, transported, and disposed of in accordance with applicable federal, state, and local regulations. Dewatering, purge, and development fluids will not be recharged back to the land surface or subsurface of the Site and will be managed off-Site unless prior approval is obtained from NYSDEC.

Impacted water originating from equipment decontamination, excavation dewatering, and monitoring well purging, will be pumped into storage tanks for off-Site disposal. A licensed liquid



waste hauler will remove, transport, and dispose of the liquid in compliance with all applicable regulations.

Discharge of water generated during large-scale construction activities to surface waters (i.e. a local pond, stream or river), if any, will be performed under a State Pollutant Discharge Elimination System (SPDES) permit.

E.10 SITE-WIDE COVER RESTORATION

After the completion of soil removal and any other invasive activities the Site-wide cover will be restored in a manner that complies with the Decision Document. The existing Site-wide cover is comprised of buildings, concrete and asphalt pavement, and millings. A demarcation layer will be placed to provide a visual reference to the top of the zone of remaining contamination, the zone that requires adherence to special conditions for disturbance of remaining impacted soils defined in the SMP. If the type of cover system changes from that which exists prior to the excavation (e.g., the building slab is replaced by soil cover), this will constitute a modification of the cover element of the remedy and the upper surface of the remaining contamination. A figure showing the modified surface will be included in the subsequent PRR and in an updated SMP.

E.11 BACKFILL FROM OFF-SITE SOURCES

All materials proposed for import onto the Site will be approved by the QEP and will be in compliance with provisions in the SMP prior to receipt at the Site. A Request to Import/Reuse Fill or Soil form, which can be found at http://www.dec.ny.gov/regulations/67386.html, will be prepared and submitted to the NYSDEC Project Manager, allowing a minimum of five business days for review.

Material from industrial sites, spill sites or other environmental remediation sites, or potentially impacted sites will not be imported to the Site.

All imported soils will meet the backfill and cover soil quality standards established in 6 NYCRR 375-6.7(d). Approval will also be based on an evaluation of the land use, protection of groundwater, and protection of ecological resources criteria. Soils that meet 'exempt' fill requirements under 6 NYCRR 360, but do not meet backfill or cover soil objectives for this Site, will not be imported onto the Site without prior approval by NYSDEC. Solid waste will not be imported onto the Site.

Imported materials will be tested at a rate consistent with Table 5.4(e)10 of DER-10, included at the end of this Section. Samples will analyzed for Target Compound List (TCL) volatile organic compounds (VOCs), TCL semi-volatile organic compounds (SVOCs), TCL pesticides, TCL Aroclors, and Target Analyte List (TAL) metals. Sample collection will be performed in accordance with the Quality Assurance Project Plan (QAPP), included as Appendix G of the SMP.



Trucks entering the Site with imported soils will be securely covered with tight fitting covers. Imported soils will be stockpiled separately from excavated materials and covered to prevent dust releases.

Table 5.4(e)10 Recommended Number of Soil Samples for Soil Imported To or Exported From a Site			
Contaminant	VOCs	SVOCs, Inorgar	nics & PCBs/Pesticides
Soil Quantity (cubic yards)	Discrete Samples	Composite	Discrete Samples/Composite
0-50	1	1	
50-100	2	1	
100-200	3	1	3-5 discrete samples from
200-300	4	1	different locations in the fill
300-400	4	2	being provided will comprise a
400-500	5	2	composite sample for analysis
500-800	6	2	
800-1000	7	2	
> 1000	Add an additional 2 VOC and 1 composite for each additional 1000 Cubic yards or consult with DER		

E.12 STORMWATER POLLUTION PREVENTION

Smaller soil disturbances, such as those required for utility maintenance, conducted after issuance of the NFA letter, will likely not require coverage under the SPDES permit system or the preparation of a Stormwater Pollution Prevention Plan (SWPPP) due to the small size of the excavation.

For larger disturbances, such as in the event of a building demolition, a SWPPP and Notice of Intent (NOI) will be required as well as applicable inspections to maintain compliance with the SPDES permit system. Silt fencing or hay bales will be installed around the entire perimeter of the construction area. Barriers and hay bale checks will be installed and inspected once a week and after every storm event. Results of inspections will be recorded in a logbook maintained at the Site and will be made available for inspection by NYSDEC upon request. All necessary repairs shall be made immediately. Accumulated sediments will be removed as required to keep the barriers and hay bale checks functional.

All undercutting or erosion of the silt fence toe anchor shall be repaired immediately with appropriate backfill materials. Manufacturer's recommendations will be followed for replacing silt fencing damaged due to weathering.

Erosion and sediment control measures identified in the SMP shall be observed to ensure that they are operating correctly. Where discharge locations or points are accessible, they shall be inspected to ascertain whether erosion control measures are effective in preventing significant impacts to receiving waters.



E.13 CONTINGENCY PLAN

If underground storage tanks (USTs) or other previously unidentified sources for impacts to subsurface media are found during post-remedial subsurface excavations or development-related construction, excavation activities will be suspended until sufficient equipment is mobilized to address the condition.

Sampling will be performed on product and surrounding soils, etc. as necessary to determine the nature of the material and proper disposal method. Analyses will be performed for TCL VOCs, TCL SVOCs, TCL pesticides, TCL Aroclors, and TAL metals unless the Site history and previous sampling results provide a sufficient justification to limit the list of analytes. In this case, a reduced list of analytical parameters will be proposed to NYSDEC for approval prior to sampling.

The NYSDEC Project Manager will be promptly notified in the event that unknown or unexpected impacted media is identified by screening during invasive Site work. Reportable quantities of petroleum product will also be reported to the NYSDEC Spills Hotline. These findings will be also included in the PRR in compliance with the SMP.

E.14 COMMUNITY AIR MONITORING

A Site-specific Community Air Monitoring Plan (CAMP) is contained in the HASP, included as Appendix F to the SMP. CAMP procedures will be implemented for all excavations on Site, regardless of size.

E.15 ODOR CONTROL PLAN

This odor control plan is capable of controlling emissions of nuisance odors on- and off-Site. Specific odor control methods will be determined for each project to adequately address potential odors specific to that project. If nuisance odors are identified at the Site boundary, or if odor complaints are received, work will be halted and the source of odors will be identified and corrected. Work will not resume until all nuisance odors have been abated. NYSDEC and the New York State Department of Health (NYSDOH) will be notified of all odor events and of any other complaints about the project. Implementation of all odor controls, including the halt of work, is the responsibility of the remedial party's Remediation Engineer, and any measures that are implemented will be discussed in the PRR.

All necessary means will be employed to prevent on- and off-Site nuisances. At a minimum, these measures will include: (a) limiting the area of open excavations and size of soil stockpiles; (b) shrouding open excavations with tarps and other covers; and (c) using foams to cover exposed odorous soils. If odors develop and cannot be otherwise controlled, additional means to eliminate odor nuisances will include: (d) direct load-out of soils to trucks for off-site disposal; (e) use of chemical odorants in spray or misting systems; and (f) use of staff to monitor odors in surrounding neighborhoods.



If nuisance odors develop during intrusive work that cannot be corrected, or where the control of nuisance odors cannot otherwise be achieved due to on-Site conditions or close proximity to sensitive receptors, odor control will be achieved by sheltering the excavation and handling areas in a temporary containment structure equipped with appropriate air venting/filtering systems.

E.16 DUST CONTROL PLAN

A dust suppression plan that addresses dust management during invasive on-site work will include, at a minimum, the items listed below:

- Dust suppression will be achieved through the use of a dedicated on-Site water truck for road wetting. The truck will be equipped with a water cannon capable of spraying water directly onto off-road areas including excavations and stockpiles.
- Clearing and grubbing of larger sites will be done in stages to limit the area of exposed, un-vegetated soils vulnerable to dust production.
- Gravel will be used on roadways to provide a clean and dust-free road surface.
- On-Site roads will be limited in total area to minimize the area required for water truck sprinkling.

E.17 OTHER NUISANCES

A plan for rodent control will be developed and utilized by the contractor for all large excavation work that may be performed.

A plan will be developed and utilized by the contractor for all remedial work to ensure compliance with local noise control ordinances.



APPENDIX F Health and Safety Plan



HEALTH AND SAFETY PLAN Brooklyn Navy Yard Industrial Park

63 Flushing Avenue Brooklyn, New York 11205 Site No. V00120

Prepared for:

BROOKLYN | NAVY | YARD

Brooklyn Navy Yard Development Corporation 63 Flushing Avenue, Unit 300 Brooklyn, New York 11205

Prepared by:



CORE Environmental Consultants, Inc. 22-48 119th Street College Point, New York 11356

March 23, 2018

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1.0 INTRODUCTION

The Brooklyn Navy Yard Development Corporation (BNYD) retained CORE Environmental Consultants, Inc. (CORE) to provide environmental consulting services related to the Brooklyn Navy Yard Industrial Park (BNYIP) Site located at 63 Flushing Avenue, Brooklyn, New York. This Sitespecific Health and Safety Plan (HASP) establishes health and safety requirements, responsibilities, and procedures to protect workers during implementation of the final remedy at the Site.

1.1 **PROJECT DESCRIPTION**

The purpose of this HASP is to set forth appropriate health and safety procedures to be followed by CORE personnel and contractors during on-Site remedial activities, including intrusive activities, and soil, groundwater, and sub-slab vapor sampling, if required.

This document will serve not only to explain the chemical and physical hazards associated with working on Site, but will also outline approved measures for dealing with such hazards. The project Health and Safety Officer (HSO) will be responsible for the development and implementation of project Health and Safety protocols. In addition, the contractor(s) will be required to designate a Site HSO for their personnel and to follow, at a minimum, the requirements of this HASP. All personnel who will be involved with earthwork (excavation, trenching, sampling, or any activity that results in a cover breach) on Site must have completed the appropriate Hazardous Waste Operations (HAZWOPER) Site Worker Training - i.e., 24 hour or 40 hour, as required by the Occupational Safety and Health Administration (OSHA) in Title 29 of the Code of Federal Regulations (29 CFR), Part 1910.120(e)(2), 1910.120(e)(3), and 1910.120(e)(8), as applicable, and the required medical surveillance as required by 29 CFR Part 1910.120(f).

The remedy will include:

Site Walk-throughs

Perform thorough Site-wide walk-throughs to evaluate the presence and condition of the Site-wide cover.

Remedial work may also include:

Soil Boring Program

Soil boring programs will involve evaluation of the nature and extent of impacts to soil through the advancement of borings at various locations on Site.

Excavation

Excavation may be performed during Site redevelopment or Site-wide cover repair. In addition, remediation of polychlorinated biphenyl (PCB)-impacted soil will require excavation.



Sample Analysis

Soil samples collected to classify impacts in PCB-impacted areas will be analyzed for, at a minimum, Target Compound List (TCL) Aroclors. Samples may also be analyzed for TCL volatile organic compounds (VOCs), TCL semi-volatile organic compounds (SVOCs), TCL pesticides, and Target Analyte List (TAL) metals, depending on the needs of each specific investigation.

Community Air Monitoring

Community air monitoring will be performed in accordance with New York State Department of Health (NYSDOH) guidance to guarantee the safety of both workers and Site occupants during any subsurface intrusive activities such as soil boring installation or excavation. The Site-specific community air monitoring requirements are discussed in Section 7.0.

1.2 SITE DESCRIPTION

The Site is located in Brooklyn, Kings County, New York and is identified as Block 2023, Lot 1 by the New York City Department of Finance. The Voluntary Cleanup Agreement (VCA) parcel is an approximately 150-acre portion of the lot that is bound by the East River to the north, Flushing Avenue to the south, Kent Avenue to the east, and Navy Street and the New York City Department of Environmental Protection (NYCDEP) Red Hook Wastewater Treatment Plant (WWTP) to the west. The Site is zoned M3-1 by the New York City Department of City Planning, indicating that it can be used for light and heavy manufacturing purposes. Site occupants are engaged in commercial and light manufacturing activities.



2.0 KEY PERSONNEL

Name	Company/Title	Address	Contact Information
Ronald Tramposch	CORE Site HSO	22-48 119th Street College Point, NY 11356	Office: (718) 786-4730 Mobile: (917) 804-8717 Email: RPT@coreenv.com
Shani Leibowitz	BNYDC Sr. Vice President	63 Flushing Avenue Brooklyn, NY 11205	Office: (718) 907-5955 Email: SLeibowitz@bnydc.org

Personnel responsible for implementation of this Health and Safety Plan are:

SITE HEALTH AND SAFETY OFFICER

The responsibilities of the Site HSO are as follows:

- Implement this HASP on Site;
- Enforce day-to-day health and safety protocols on Site;
- Require that all personnel entering the Site understand the provisions of this HASP;
- Conduct periodic training sessions on use/maintenance of personal protective equipment (PPE) and safety practices;
- Conduct daily health and safety meetings each morning;
- Direct and advise CORE's Site personnel, visitors, and contractor(s) on the specific hazards associated with the Site as well as any changes related to health and safety requirements at the Site;
- Conduct necessary health and safety monitoring;
- Oversee air monitoring program, including monitoring logs;
- Monitor Site conditions and determine if changes in PPE levels are required;
- Execute work stoppages, if required; and
- Report changes in Site conditions and changes in PPE requirements to the Project HSO.

Daily Health and Safety Meeting Forms are included in Attachment A.



3.0 MEDICAL SURVEILLANCE REQUIREMENTS

All personnel who engage in waste Site activities for 30 days or more per year will participate in a Medical Surveillance Program. All project personnel involved in on-Site activities in impacted areas will be required to undergo annual medical examinations. This examination must take place not more than one year prior to and one year after the completion of Site work and must be conducted by a physician who is board-certified in occupational medicine. The physician should be familiar with the job-related duties of each worker examined. The physician must certify whether the individual is fit to conduct work on hazardous waste Sites using personal protection, or whether he or she must work within certain restrictions.

Any person exposed to high levels of hazardous substances will be required to undergo a repeat medical exam at, or before, the conclusion of the project to determine possible health impacts. Any person suffering a lost-time injury or illness must receive medical approval prior to returning to work. When employment is terminated for any reason, the employee must receive an exit medical examination.

All medical records will be held by the employer for the period of employment plus at least 30 years, in accordance with OSHA regulations on confidentiality and any other applicable regulations and will be made available to OSHA upon request. The components of Medical Surveillance include:

- Medical and occupational history;
- Physical examination, with particular attention to the cardiopulmonary system, general physical fitness, skin, blood-forming, hepatic, renal, and nervous systems;
- Blood and urine analyses;
- Pulmonary function testing; and
- Additional tests as appropriate, such as x-ray, stress tests, etc.



4.0 SITE HAZARD/RISK ANALYSIS

Physical hazards include the dangers of tripping and falling on uneven ground, operation of heavy equipment such as drill rigs, vehicular traffic, and utilities either above-ground or buried. The following are physical hazards which may be encountered during remedial activities

4.1 HAZARD ANALYSIS

PPE is the initial level of protection based on the activity hazards and Site conditions which have been identified. Upgrades to respiratory protection may be required based on the action levels discussed in Section 7.0. General on-Site provisions will include: extra nitrile, leather, and/or Kevlar gloves, extra protective coveralls, drinking water and electrolyte fluids, reflective vest, first aid kit, fire extinguisher, hearing protection, and washing facilities.

If Site conditions suggest the existence of a situation more hazardous than anticipated, the Site personnel will evacuate the immediate area. The hazard, level of precautions, and PPE will then be reevaluated.

4.2 HANDLING DRUMS AND CONTAINERS

Regulations for handling drums and containers are specified by OSHA in 29 CFR 1910.120(j). Potential hazards associated with handling drums include vapor generation, fire, explosions, and possible physical injury. Handling of drums/containers during remedial activities may be necessary. If drum/container handling is necessary, it will be performed in accordance with applicable regulations.

4.3 ELECTRICAL HAZARDS

4.3.1 Utilities

The Site may have shallow, buried utilities and also overhead utilities in certain areas. It will be necessary for parties disturbing the existing ground surface and conducting operations with heavy equipment having high clearances to exercise caution in performing project-related work with respect to the presence of utilities. Utility companies with active, buried lines in the Site area will be asked by the contractor performing intrusive activities to mark their facilities. Employees will use these data to choose work locations.

4.3.2 Underground Utilities

No excavating, drilling, boring, or other intrusive activities will be performed until an underground utility survey, conducted by knowledgeable persons or agencies, has been made. This survey will identify underground and in-workplace utilities such as the following:

- Electrical lines and appliances;
- Telephone lines;



- Cable television lines;
- Gas lines;
- Pipelines;
- Steam lines;
- Water lines;
- Sewer lines; and/or
- Pressurized air lines.

The location of utilities will be discussed with CORE personnel and contractors during a Site safety briefing. Utilities identified during survey should be marked or access otherwise restricted to avoid chance of accidental contact.

Even when a utility search has been completed, drilling, boring, and excavation should commence with caution until advanced beyond the depth at which such utilities are usually located. Utilities will be considered "live" or active until reliable sources demonstrate otherwise. Geophysical surveys, including ground penetrating radar (GPR) and electromagnetic (EM) survey, if necessary, will be completed in the area of all indoor boring locations to further refine the presence and locations of potential subsurface utilities.

4.3.3 Overhead Utilities

CORE does not anticipate performing work in the area of overhead utilities; however, if present, clearances will be adequate for the safe movement of vehicles and for the operation of construction equipment.

Overhead or above-ground electric lines should be considered active until a reliable source has documented them to be otherwise. Elevated work platforms, ladders, scaffolding, man-lifts, and drill or vehicle superstructures will be erected a minimum of 20 feet (the actual distance is dependent upon the voltage of the line) from overhead electrical lines until the line is de-energized, grounded, or shielded so arcing cannot occur between the work location or superstructure.

4.4 PHYSICAL HAZARDS

Drilling and excavation programs pose the greatest potential threat to the safety of Site personnel. The following sections describe specific safety measures to be implemented during specific activities.



4.4.1 Heat Stress

Employees may be exposed to the hazards associated with heat stress when ambient temperatures exceed 70 degrees Fahrenheit (°F). Employees should increase water intake while working in conditions of high heat. Enough water should be available so that each employee can consume one quart of water per hour. In addition, they should increase number of rest breaks and/or rotate employees in shorter work shifts. Employees should rest in cool, dry, shaded areas for at least five minutes. Employees should not wait until they feel sick to cool down. Watch for signs and symptoms of heat exhaustion and fatigue. In the event of heat stroke, bring the victim to a cool environment, call for help, and initiate first aid procedures.

The following prevention, recognition, and treatment strategies will be implemented to protect personnel from heat stress. Personnel will be trained to recognize the symptoms of heat stress, and to apply the appropriate treatment.

Prevention

- Provide plenty of liquids. A 50 percent solution of fruit punch (or similar) in water, or plain water to be taken with salted foods such as pretzels will be available in the support zone.
- Buddy system. No individual will attempt to undertake any activity alone.
- Provide cooling devices. A spray hose and a source of water will be provided to reduce body temperature, cool protective clothing, and/or act as a quick-drench shower in case of an exposure incident.
- Adjustment of the work schedule. As is practicable, the most labor intensive tasks should be carried out during the coolest part of the day.

Recognition and Treatment

Any person who observes any of the following forms of heat stress, either in himself or in another worker, will report this information to the Site HSO as soon as possible.

- 1. Heat Rash (or prickly heat)
 - *Cause:* Continuous exposure to hot and humid air, aggravated by chafing clothing.
 Symptoms: Eruption of red pimples around sweat ducts accompanied by intense itching and tingling.
 Treatment: Remove source of irritation and cool skin with water or wet clothes.
- 2. Heat Cramps (or heat prostration)
 - *Cause:* Profuse perspiration accompanied by inadequate replenishment of body water and electrolytes.



3.

Symptoms:	Sudden development of pain and/or muscle spasms in the abdominal region.
Treatment:	Remove the worker to the contamination reduction zone. Provide fluids orally. Remove protective clothing. Decrease body temperatures and allow a period of rest in cool location.
Heat Exhaustion	
Cause:	Overexertion in a hot environment and profuse perspiration accompanied by inadequate replenishment of body water and electrolytes.
Symptoms:	Muscular weakness, staggering gait, nausea, dizziness, shallow breathing, pale and clammy skin, approximately normal body temperature.
Treatment:	Perform the following while simultaneously making arrangements for transport to a medical facility: Remove the worker to the contamination reduction zone. Remove protective clothing. Lie the worker down on his or her back, in a cool place, and raise the feet 6 to 12 inches. Keep warm, but loosen all clothing. If conscious, provide sips of a salt water solution, using one teaspoon of salt in 12 ounces of water. Transport the worker to a medical facility.
Heat Stroke	

Cause: Same as heat exhaustion.

Symptoms: Dry and hot skin, dry mouth, dizziness, nausea, headache, rapid pulse.

Treatment: Cool worker immediately by immersing or spraying with cool water or sponge bare skin after removing protective clothing. Transport to hospital.

4.4.2 Cold Stress

4.

Exposure to cold weather, wet conditions and extreme wind-chill factors may result in excessive loss of body heat (hypothermia) and/or frost bite. To guard against cold exposure and to prevent cold injuries, appropriate warm clothing should be worn, warm shelter must be readily available, rest periods should be adjusted as needed, and the physical conditions of on Site field personnel should be closely monitored. Personnel and supervisors working on Site will be made aware of the signs and symptoms of frost bite and hypothermia such as shivering, reduced blood pressure, reduced coordination, drowsiness, impaired judgment, fatigue, pupils dilated but reactive to light,



and numbing of the toes and fingers. The potential for wetting of protective clothing should be of concern, since wet clothing (from sweat or splashes) will provide poor insulation against the cold.

4.4.3 Noise

Noise is a potential hazard associated with the operation of heavy equipment, power tools, pumps, and generators. Employees who will perform suspected or established high noise tasks and operations for short durations (less than 1 hour) will wear hearing protection. If deemed necessary by the HSO, additional hearing protection may be added and the need to monitor sound levels for Site activities will be determined. Other employees who do not need to be in proximity should distance themselves from the equipment generating the noise.

4.4.4 Hand and Power Tools

In order to complete the various tasks for the project, personnel may use hand and power tools. The use of hand and power tools can present a variety of hazards, including physical harm from being struck by flying objects, being cut or struck by the tool, fire, and electrocution. Work gloves, safety glasses, and hard hats will be worn by the operating personnel when using hand and power tools.

4.4.5 Slips, Trips, and Falls

Working in and around the Site may pose slip, trip, and fall hazards due to slippery and uneven surfaces. Personnel will wear proper foot gear and will employ good work practice and housekeeping procedures to minimize the potential for slips, trips, and falls.

4.4.6 Manual Lifting

Manual lifting of objects and equipment may be required. Failure to follow proper lifting technique can result in back injuries and strains. Employees should use a buddy system and/or power equipment to lift heavy loads whenever possible and should evaluate loads before trying to lift them. Carrying heavy loads with a buddy and proper lifting techniques include: 1) make sure footing is solid; 2) make back straight with no curving or slouching; 3) center body over feet; 4) grasp the object firmly and as close to your body as possible; 5) lift with legs; and 6) turn with your feet, don't twist.

4.4.7 Overhead Dangers

Overhead dangers, including but not limited to falling debris and equipment, can occur while operating drill rigs and excavation equipment. CORE personnel will maintain a minimum distance from large overhead operations and proper communication with heavy equipment operators and their handlers, should work necessitate their presence beyond the minimum safety distance. Proper PPE will be worn during these types of activities including steel-toed/shank boots, safety vests, and hard hats.



4.4.8 Cuts and Lacerations

Field activities that involve drilling and sampling activities usually involve contact with various types of machinery. At least one person on Site must be currently certified in first aid and cardiopulmonary resuscitation (CPR) techniques. Personnel trained and certified in first aid should be prepared to take care of cuts and bruises as well as other minor injuries. CORE will have a first aid kit approved by the American Red Cross available during all field activities.

4.4.9 Traffic Hazards

All traffic, vehicular and pedestrian, shall be maintained and protected at all times consistent with local, state, and federal, and agency regulations regarding such traffic and in accordance with direction of the Owners. Traffic hazards will be limited as the remediation project is to be completed primarily on private land and not in public right of way areas.

4.5 CHEMICAL HAZARDS

Chemicals that may potentially be encountered at the Site include SVOCs, primarily polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs) and metals. The health/safety characteristics and exposure limits of these compounds are listed in Table 1. The risk of exposure can be by dermal, ingestion, or respiratory routes, depending on the type of compound and intrusive activity being performed.

If during subsurface intrusive activities, the potential for workers to be exposed to particulates and compounds, such as dusts, SVOCs, PCBs, and metals, in soil through inhalation/ingestion/dermal contact routes, workers may need to apply water or an amended water solution to the area to help control the generation of airborne dusts, and particulates. Workers may also use respiratory protection including the use of an air-purifying respirator equipped with approved filter/cartridges. An analysis of the work tasks and potential for chemical exposure should be performed to determine the correct PPE, and/or respirator cartridge(s), if needed. The analysis should include a chemical waste profile to help ensure that PPE specified will be appropriate for the respective chemical hazard(s).

4.6 BIOLOGICAL HAZARDS

There are no anticipated biological hazards associated with the Site.



5.0 SITE CONTROL

In order to keep unauthorized personnel from entering the work areas subsurface intrusive activities without proper protective equipment, and for good control of overall Site safety, two work zones will be established. The two work zones are the support zone and the contamination reduction zone/exclusion zone. Actual zone width will be determined by optimal size of work area and by obstructions, if any. A brief description of the Site work zones follows.

5.1 SUPPORT ZONE

The support zone at the Site will be a mobile unit (automobile) including a cellular telephone for communication. The support zone will be located as near as practicable to the active work areas and decontamination areas.

5.2 CONTAMINATION REDUCTION ZONE/EXCLUSION ZONE

The contamination reduction zone and exclusion zone will be incorporated into one zone at each project-specific location. This zone will be mobile and the location will be dependent upon where active work is being performed. The decontamination of personnel, light equipment, and heavy equipment will be performed prior to leaving the contamination reduction zone.

A temporary storage location will be established at the Site for any stockpiles generated during excavation or construction activities. The location will be situated away from vehicular and pedestrian traffic, and will be secured via fencing or other apparatus.

5.3 SITE VISITATION

It is possible that the Owners or officials from regulating bodies and jurisdiction will visit the Site during operations. It is also possible that an OSHA representative will wish to inspect the Site. All such officials must meet the requirements of occasional Site workers (24 hour OSHA-approved training and Site-specific training) before going into any active contamination reduction zone/exclusion zone. Visitors other than the Owners, NYCDEC, or OSHA representatives will be subject to the additional requirements of having to receive written permission from the Owners to conduct a Site visit. Because of the nature of the work, the work zone will be continually supervised. Signs will be used to prevent the entrance of unauthorized visitors.

All visitors must supply their own PPE and will be directed to appropriate disposal areas for soil or used PPE.



6.0 PERSONAL PROTECTIVE EQUIPMENT

Since personnel working on Site may be exposed to unexpected levels of hazardous airborne chemicals or compounds released during subsurface intrusive activities, or may come in contact with SVOCs, PCBs, and/or metals in soil, various levels of protection will be utilized during field activities. Components of all levels of personal protection that will be available are listed in Table 2. Planned levels of protection for various activities are given in Table 3.

In the event that unexpected levels of organic vapors are encountered, any personnel working at Level D protection will don their respirators at once (upgrade to Level C). The Site HSO will consult with the Project HSO to decide if and when Level D protection may be resumed, or if a higher level of PPE is required. Some modification in safety equipment (e.g., switching from polycoated disposable coveralls to standard disposable coveralls) may be implemented in order to balance concerns for full contaminant protection against concerns for the possibility of heat stress resulting from the need to wear more restrictive PPE. Such modifications may be implemented only if approved in advance by the Site HSO, following consultation with the Project HSO. PPE which fully complies with the requirements of all required levels of protection should be immediately available at all times on the Site.

Level C respiratory protection will be provided using The National Institute for Occupational Safety and Health (NIOSH) -approved half-face respirators, with appropriate NIOSH approved cartridge for removal of organic vapors. All team members will be fit-tested for respirators using irritant smoke. Due to difficulties in achieving a proper seal between face and mask, persons with facial hair will not be allowed to work in areas requiring respiratory protection.

For the fullest protection of on-Site personnel, the supervising field engineer/geologist will conduct organic vapor monitoring at closely spaced intervals during subsurface intrusive activities. Monitoring will be accomplished by real-time monitoring equipment, such as a photoionization detector (PID).

The primary purpose of this monitoring will be to assess the adequacy of respiratory protection and to make it possible to stop work quickly if explosive or hazardous gases are encountered, or if an oxygen-deficient atmosphere is detected. The air monitoring to be carried out during all intrusive activities is summarized below.

Site personnel timesheets with employee and Project Manager signatures will serve to document the amount of time spent on Site by each team member.



7.0 COMMUNITY AIR MONITORING PLAN

Air monitoring will be performed throughout subsurface intrusive activities by trained CORE personnel. Air will be monitored for particulates. Monitoring is restricted to particulates as volatile organic compounds (VOCs) were not identified as constituents of potential concern (COPCs) during previous Site investigations. If VOCs are encountered during excavation activities, monitoring for volatiles utilizing a photoionization detector (PID) should be reevaluated and this Community Air Monitoring Plan (CAMP) updated accordingly. All air monitoring results and meteorological data (e.g., temperature range, wind speed, wind direction, etc.), if applicable, will be recorded on monitoring logs. Air quality monitoring will not be performed during precipitation events.

Community air monitoring will be performed in accordance with NYSDOH guidance to guarantee the safety of both workers and Site occupants. The NYSDOH Generic CAMP is included as Attachment B. Attachment B also includes the New York State Department of Environmental Conservation (NYSDEC) Technical and Administrative Guidance Memorandum (TAGM) #4031 for Fugitive Dust Suppression and Particulate Monitoring at Inactive Hazardous Waste Sites.

The purpose of the CAMP is to protect air quality outside of the project area from any dust or particulates generated during subsurface intrusive activities. This CAMP is applicable during the following activities:

- Drilling activities
- Test pit excavation and/or excavation for Site redevelopment

7.1 METEOROLOGICAL MONITORING

Wind is the primary mechanism for dust and particulate transport outside of the project area. Primary wind direction will be determined prior to the start of each workday, and may be reestablished at any time if a change in wind direction is observed.

7.2 TOTAL VOLATILES

During intrusive activities air monitoring for VOCs will be performed within the work/breathing zone utilizing a PID equipped with a 10.2 eV lamp. When readings up to 1 part per million (ppm) above background in the breathing zone are observed, work activity will continue. Monitoring will be continuous, and recorded at 15-minute intervals.

Levels less than 1 ppm of total volatiles are permissible. If the concentrations of VOCs in ambient air in the work zone area exceed 1 ppm for the 15-minute average, work activity must be temporarily halted. Air monitoring is to remain continuous while work is halted. If vapor levels decrease below 1 ppm, work can resume with continued monitoring. If vapor levels between 1 and 25 ppm are detected, work must be halted, the vapor source identified, abatement actions taken,



and air monitoring continued. If sustained readings from 1 to 25 ppm above background in the breathing zone are observed, work will only be allowed to continue after an upgrade to Level C PPE. Intrusive activities will be shut down if vapor in the work area exceed 25 ppm.

7.3 PARTICULATE MONITORING

For intrusive activities, particulate concentrations will be monitored continuously at the upwind and downwind perimeter boundaries of the work zone. Tri-pod mounted real-time monitoring equipment capable of detecting particulate matter less than 10 micrometers (PM-10) in size will be utilized. Monitoring will be continuous and recorded every minute with 15-minute running averages. Potential fugitive dust migration off Site should also be visually assessed during intrusive activities.

- If the downwind PM-10 level is 100 micrograms per cubic meter (µg/m³) greater than upwind/background concentrations over any 15-minute average period, dust suppression procedures will occur.
- If downwind PM-10 concentrations reach levels of 150 µg/m³ (or more) greater than upwind/background concentrations, work must be halted while additional dust suppression measures are implemented.

7.4 AIR MONITORING EQUIPMENT CALIBRATION

The particulate monitor will be calibrated to $0 \ \mu g/m^3$ daily (prior to field activities) and the results will be recorded. Intrusive activities will not begin until all instruments are calibrated and ambient air conditions are recorded. The particulate monitor will be recalibrated throughout the day as necessary.

CAMP monitoring forms are included as Attachment C.

7.5 WORK STOPPAGE RESPONSES

The following responses will be initiated whenever one or more of the action levels necessitating a work stoppage is exceeded:

- The Site HSO will be consulted immediately;
- All personnel will be cleared from the work area until appropriate mitigation techniques have been implemented;
- Monitoring will be continued until the end of the work day; and
- NYSDEC and NYSDOH will be notified as soon as possible.



Any chemical release to air, water, or soil must be reported to the Site HSO at once. Any exposure resulting from protective equipment failure must be immediately reported to the Site HSO and to the Project HSO in writing within 24 hours.

8.0 DECONTAMINATION PROCEDURES

8.1 DECONTAMINATION OF PERSONNEL

Decontamination of personnel will be performed at each contamination reduction zone/exclusion zone. This can be accomplished by washing and rinsing the outer gloves and outer boots over the decontamination trough. Disposable clothing can then be removed and discarded into a 30-gallon trash can with a vinyl liner. If personnel are in Level C protection, the above procedures will be followed and the respirator will be removed, sanitized, and placed in a plastic bag.

8.2 DECONTAMINATION OF EQUIPMENT

Heavy Equipment

Decontamination of heavy equipment (such as excavators) will be accomplished by steam cleaning on a decontamination pad constructed of wood and covered with water retaining polyethylene sheeting with a minimum thickness of 6 mil. Washing of heavy equipment will be completed with attention to minimize any overspray of water, debris and/or soil. All wash water and debris will be collected and containerized in Department of Transportation (DOT)-approved 55-gallon drums for later off-Site disposal. The polyethylene sheeting will be examined frequently for any tears or punctures that may cause a leak. The sheeting will be discarded in a municipal trash dumpster.

Mid-Weight Equipment

Decontamination of mid-weight equipment (such as shovels, augers, etc.) will be accomplished by scrubbing the equipment with a heavy duty bristle brush in a 5-gallon bucket containing water and Alconox® detergent. After washing and scrubbing, the equipment will be rinsed by placing it in a separate bucket of water to remove soap and debris. The wash and rinse water will be containerized in DOT-approved 55-gallon drums for later off-Site disposal.

Light Equipment

Decontamination of light equipment (such as tools, containers, monitoring instruments, radios, clipboards, etc.) will be accomplished by wiping equipment off with clean, damp cloths. The cloths can be discarded in the trash can with disposable clothing.



9.0 EMERGENCY PROCEDURES

The most likely incidents for which emergency measures might be required are:

- A sudden release of hazardous gases/vapors during drilling or excavating;
- An explosion or fire occurring during drilling or excavating; and/or
- A heavy equipment-related accident, or other accident resulting in personal injury.

Emergency procedures established to respond to these incidents are covered under the sections that follow.

9.1 COMMUNICATIONS

A portable telephone will be maintained by the Site HSO during the entire project. The phone will be frequently checked to ensure an appropriate signal is available for the phone to work properly.

9.2 FIRE/EXPLOSION

It will be the responsibility of the contractors to have a fire extinguisher available at the drill rig and/or excavation locations. The operator will have further responsibility of taking fire prevention measures such as the continuous removal from the rig of accumulated oil, grease, or other combustible materials.

In the event of a fire that cannot be controlled with available equipment, or in the event of an explosion, the local fire department will be summoned immediately by the Site HSO, who shall apprise them of the situation upon their arrival. The Owners/occupants will also be notified.

9.3 FIRST AID

First aid for personal injuries will be administered by the Site HSO. All accidents, however insignificant, will be reported to the Site HSO. Personnel designated to administer first aid will have received a minimum of eight hours training in first aid and CPR, and be certified by the American Red Cross. If a Site worker should require further treatment, he/she will be transported to the hospital. The on-Site vehicle will carry a copy of the HASP which includes written directions to the hospital, as well as a map showing the route.

The following sections are intended as a "quick guide" to basic first aid only. Effective CPR and first aid require hands-on training that is best accomplished by attending a class in person.

One common formula for performing first aid:



Do a primary scene and patient survey, followed by checking airway, breathing, and circulation (ABCs).

Survey the scene and approach the victim. Determine whether the scene is safe. Look for dangers, such as downed power lines, traffic, unstable vehicles, or accidents. Determine what may have happened, how many victims are involved, and if any bystanders can help. If several persons appear to be injured, perform triage.

Survey the patient and perform an initial assessment. Get consent from a conscious victim (parent/guardian if the victim is a minor) before providing care. If the victim is unconscious, consent is implied. Use infection control precautions and check for signs and symptoms of any life-threatening conditions and care for them. To perform an initial assessment:

- Check the victim for consciousness and obtain consent if the victim is conscious;
- Check the ABCs (airway, breathing and circulation); and
- Check for severe bleeding.

Provide brief care for the conditions. If the patient lacks air or circulation, they may begin to suffer brain damage after approximately four minutes. After ten minutes, they most likely will have some permanent brain damage. To care for breathing and circulation means first clearing the airway, and briefly attempting to restart their breathing or circulation with rescue breathing or CPR (and use of a portable defibrillator, where available). This step is crucial, because an unconscious person's airway can be blocked by a normal, comfortable-looking head position (e.g., on their back with a pillowed head). Often, simply tilting the head back will open the airway and restart their breathing. Likewise, many people recovering from a blocked airway vomit, and if they are unconscious, they can drown in the vomit. The standard prevention for both these issues is to turn a breathing, unconscious patient on their side, turning their head and spine in the same movement to avoid spinal injury, pillowing their head on one of their arms. Do not move casualties unless it is necessary to remove them from danger, or to make treatment possible (such as onto a hard surface for CPR).

1. Call for emergency services

Calling for emergency medical services must take priority over extended care such as long term rescue breathing or extended CPR, since these techniques are intended to gain time for emergency services to arrive as part of the chain of survival. However, if bystanders are available, both can be pursued at the same time. If you ask others to call an ambulance for you, make sure they report back to you once released by the emergency operator to confirm that the call has been made.



2. Do a secondary patient survey, and provide appropriate emergency first aid

The secondary survey is to gather information about conditions or injuries that may not be life threatening, but may become so if not cared for. Perform a secondary survey only if you are sure that the victim has no life-threatening conditions. A properly trained and certified person performs three stages in the secondary survey:

- 1. Interview the victim and include bystanders to supplement info from the patient:
 - Signs and Symptoms Visible indications of injury and patient reported sensations (e.g. pain)
 - Allergies especially those relevant to injury (i.e. allergy to latex, penicillin, etc.)
 - Medications what current or recent medications the patient is taking
 - Past Medical History any related history, or medical conditions that could complicate treatment (e.g. heart condition)
 - Last meal last food and/or drink
 - Events confirm how injury most likely occurred
- 2. Vitals
 - LOC Level of Consciousness description (e.g. alert, aware, disoriented, confused, unresponsive) or AVPU (Alert, Voice, Pain, Unresponsive)
 - Breathing Rate Number of breaths per minute. Calculate by counting breaths for ten seconds and multiplying by six, or 15 seconds and multiplying by four.
 - Pulse Rate Number of heart beats per minute. Calculate by counting pulse for ten seconds and multiplying by six, or 15 seconds and multiplying by four. Pulse for an unconscious person is taken on the neck (carotid pulse) and on the wrist (radial pulse) for a conscious person.
 - Skin Condition Pale vs. normal, cool/cold vs. hot, clammy/sweaty vs. dry
- 3. Head-to-toe examination
 - Perform a head-to-toe examination
 - Look for medical alert bracelets or medallions.
 - Compare one side of the patient against the other
 - Look for pain or deformity



9.4 EMERGENCY ASSISTANCE

The following table list telephone numbers of police, fire, hospital, and other agencies whose services might be required, or from whom information might be needed. A hospital route map and directions to The Brooklyn Hospital Center, is included in Attachment D.

Name	Contact Numbers
The Brooklyn Hospital Center 121 DeKalb Avenue Brooklyn, New York 11201	Main Number: (718) 250-8000
NYCDEP	311
Fire Department	911
Police Department	911
Poison Information Center	1-800-222-1222
NYSDEC Emergency Hotline	1-800-457-7362
BNYDC	(718) 852-1441



10.0 SAFETY CONCERNS AND CONTINGENCY MEASURES

Normally, it is subsurface intrusive activities that pose the greatest potential threat to the safety of Site personnel. Subsurface intrusive activities at the Site will be conducted under the OSHA Safety and Health Standards (29 CFR Part 1926/191) relative to heavy equipment operation. The following sections describe specific safety measures to be implemented during specific activities.

10.1 BUDDY SYSTEM

The buddy system is an arrangement in which persons are paired, as for mutual safety or assistance. All field work will be completed by at least a two person team.

10.2 EXCAVATION

An active excavation exclusion sub-zone is established by opening the ground surface. A personal air monitor will be used to monitor in real time in this zone. Action levels will be considered to have been reached when a continuous, steady reading has been observed.

If at any time during subsurface intrusive activities, underground storage tanks (USTs), metal, or concrete are penetrated, excavation activities will cease immediately. After obtaining instrument readings, the project geologist/Site HSO will decide whether to continue or discontinue excavation.

10.3 DECONTAMINATION WATER

Investigation-derived waste (IDW) will be containerized in DOT-approved 55-gallon steel drums. All containers will be labeled with the contents and date, and will be stored at an on-Site staging area for later off-Site transport and disposal.

A waste management firm capable of handling both hazardous and nonhazardous wastes, such as National Response Corporation (NRC) of Great River, New York, will be employed to perform waste analysis and profiling, transport, and disposal for all IDW.



TABLES

 TABLE 1

 HAZARD CHARACTERISTICS OF SUSPECTED CONTAMINANTS

Substance	Incompatibles/Reactive	Exposure Routes/Target Organs	Standards
Polycyclic aromatic hydrocarbons (PAHs)	Strong oxidizers	Inhalation, ingestion, skin and/or eye contact Respiratory system, skin bladder; lung, kidney, and skin cancers	NIOSH REL: TWA 0.1 mg/m ³ OSHA PEL: 0.2 mg/m ³ TWA
Polychlorinated biphenyls (PCBs)	Strong oxidizers	Inhalation, ingestion, skin and/or eye contact Eyes, skin, liver, reproductive system	NIOSH REL: TWA 0.001 mg/m ³ OSHA PEL: 0.05 mg/m ³ TWA (skin)
Arsenic	Strong oxidizers, bromine azide, hydrogen gas	Inhalation, skin absorption, ingestion, skin and/or eye contact Liver, kidneys, skin, lungs, lymphatic system; lung and lymphatic cancers	NIOSH: 15-min 0.002 mg/m ³ OSHA PEL: 0.010 mg/m ³ TWA
Copper	Oxidizers, alkalis, sodium azide, acetylene	Inhalation, ingestion, skin and/or eye contact Eyes, skin, respiratory system, liver, kidneys	NIOSH REL: TWA 1 mg/m ³ OSHA PEL: 1 mg/m ³ TWA

NIOSH = National Institute for Occupational Safety and Health

OSHA = Occupational Safety and Health Administration

REL = NIOSH recommended exposure limits, up to 10 hour work day exposure limit, 40 hours/week.

PEL = OSHA permissible exposure limit, 8 hour exposure limit, 40 hours/week, 29 CFR 1910.1000. REL, PEL in $mg/m^3 = (PEL in ppm x molecular weight) / 24.45.$



 TABLE 2

 COMPONENTS OF PERSONAL PROTECTION LEVELS

Level D Protection	Level C Protection
• Safety glasses with side shields (or goggles)	Hard Hat
Hard Hat	Ploy-coated disposable (or standard disposable) overalls
Face Shield (optional)	Inner gloves of tight-fitting latex or vinyl
Ordinary coveralls	Outer gloves of neoprene or nitrile
Ordinary work gloves	 Steel-toe, steel-shank work shoes or boots (chemical resistant)
Steel-toe, steel-shank works shoes or boots (chemical resistant)	Outer boots of neoprene or butyl rubber
Ordinary work gloves	 Disposable outer "booties" (optional work shoes or boots)
	 Full-face air-purifying respirator (to be worn)**
	Taping of gloves and boots to disposable coveralls

** Respirator to be fitted with NIOSH/MSHA - approved high-efficiency filter (HEPA) combination respirator cartridges approved for organic vapors, particulates, gases, and fumes. Half-face respirator, face shield, and safety glasses with side shields (or goggles) may be substituted with approval of the Site HSO.



Task	PPE Level	Site-Specific Requirements	Respirator
	Mobili	Mobilization/Demobilization	
Reconnaissance	D	Safety glasses, steel toe/shank safety boot, reflective vest, leather work gloves, hearing protection as needed	D - None
Mobilization/Demobilization of Equipment and Supplies	D	Hard hat, safety glasses, steel toe/shank safety boot, reflective vest, leather work gloves, hearing protection as needed	D – None
Establishment of Site Security, Work Zones, and Staging Area	D	Hard hat, safety glasses, steel toe/shank safety boot, reflective vest, leather work gloves, hearing protection as needed	D - None
	Groun	Groundwater/Soil Sampling	
Soil Borings, Excavation, Digging Test Pits, Backfilling, Grading Observation, Sampling	Q	Hard hat, safety glasses, steel toe/shank safety boot with overboot as needed, reflective vest, leather work gloves as needed, nitrile gloves, hearing protection as needed, Tyvek as needed	Level D – None Level C – If action levels exceeded

TABLE 3 ANTICIPATED LEVELS OF PERSONAL PROTECTION FOR PLANNED ACTIVITIES



TABLE 4 Action Levels During Intrusive Activities

Particulates (μg/m³)	Responses
100 μg/m ³ or more above Background (15 minute average)	Implement dust suppression measures Continued monitoring every 15 minutes
150 μg/m ³ Sustained reading	If action level of 150 μg/m ³ is continuously exceeded, work stoppage to implement additional dust suppression measures Continued monitoring every 15 minutes



ATTACHMENTS

ATTACHMENT A Health and Safety Field Meeting Forms



HEALTH AND SAFETY FIELD MEETING FORM

Date:	Time:
Project Name:	
Topics Discussed:	
Personal Protection	
Special Site Considerations:	
Emergency Information:	
Hospital Location:	

<u>Attendees</u>

Name (printed)	Company	Signature

Meeting Conducted by:_____



HEALTH AND SAFETY FIELD MEETING FORM (cont.)

Attendees

Name (printed)	Company	Signature

Meeting Conducted by:

Signature

ATTACHMENT B NYSDOH Generic Community Air Monitoring Plan

Appendix 1A New York State Department of Health Generic Community Air Monitoring Plan

Overview

A Community Air Monitoring Plan (CAMP) requires real-time monitoring for volatile organic compounds (VOCs) and particulates (i.e., dust) at the downwind perimeter of each designated work area when certain activities are in progress at contaminated sites. The CAMP is not intended for use in establishing action levels for worker respiratory protection. Rather, its intent is to provide a measure of protection for the downwind community (i.e., off-site receptors including residences and businesses and on-site workers not directly involved with the subject work activities) from potential airborne contaminant releases as a direct result of investigative and remedial work activities. The action levels specified herein require increased monitoring, corrective actions to abate emissions, and/or work shutdown. Additionally, the CAMP helps to confirm that work activities did not spread contamination off-site through the air.

The generic CAMP presented below will be sufficient to cover many, if not most, sites. Specific requirements should be reviewed for each situation in consultation with NYSDOH to ensure proper applicability. In some cases, a separate site-specific CAMP or supplement may be required. Depending upon the nature of contamination, chemical- specific monitoring with appropriately-sensitive methods may be required. Depending upon the proximity of potentially exposed individuals, more stringent monitoring or response levels than those presented below may be required. Special requirements will be necessary for work within 20 feet of potentially exposed individuals or structures and for indoor work with co-located residences or facilities. These requirements should be determined in consultation with NYSDOH.

Reliance on the CAMP should not preclude simple, common-sense measures to keep VOCs, dust, and odors at a minimum around the work areas.

Community Air Monitoring Plan

Depending upon the nature of known or potential contaminants at each site, real-time air monitoring for VOCs and/or particulate levels at the perimeter of the exclusion zone or work area will be necessary. Most sites will involve VOC and particulate monitoring; sites known to be contaminated with heavy metals alone may only require particulate monitoring. If radiological contamination is a concern, additional monitoring requirements may be necessary per consultation with appropriate DEC/NYSDOH staff.

Continuous monitoring will be required for all <u>ground intrusive</u> activities and during the demolition of contaminated or potentially contaminated structures. Ground intrusive activities include, but are not limited to, soil/waste excavation and handling, test pitting or trenching, and the installation of soil borings or monitoring wells.

Periodic monitoring for VOCs will be required during <u>non-intrusive</u> activities such as the collection of soil and sediment samples or the collection of groundwater samples from existing monitoring wells. "Periodic" monitoring during sample collection might reasonably consist of taking a reading upon arrival at a sample location, monitoring while opening a well cap or

overturning soil, monitoring during well baling/purging, and taking a reading prior to leaving a sample location. In some instances, depending upon the proximity of potentially exposed individuals, continuous monitoring may be required during sampling activities. Examples of such situations include groundwater sampling at wells on the curb of a busy urban street, in the midst of a public park, or adjacent to a school or residence.

VOC Monitoring, Response Levels, and Actions

Volatile organic compounds (VOCs) must be monitored at the downwind perimeter of the immediate work area (i.e., the exclusion zone) on a continuous basis or as otherwise specified. Upwind concentrations should be measured at the start of each workday and periodically thereafter to establish background conditions, particularly if wind direction changes. The monitoring work should be performed using equipment appropriate to measure the types of contaminants known or suspected to be present. The equipment should be calibrated at least daily for the contaminant(s) of concern or for an appropriate surrogate. The equipment should be capable of calculating 15-minute running average concentrations, which will be compared to the levels specified below.

1. If the ambient air concentration of total organic vapors at the downwind perimeter of the work area or exclusion zone exceeds 5 parts per million (ppm) above background for the 15-minute average, work activities must be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities can resume with continued monitoring.

2. If total organic vapor levels at the downwind perimeter of the work area or exclusion zone persist at levels in excess of 5 ppm over background but less than 25 ppm, work activities must be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities can resume provided that the total organic vapor level 200 feet downwind of the exclusion zone or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less - but in no case less than 20 feet, is below 5 ppm over background for the 15-minute average.

3. If the organic vapor level is above 25 ppm at the perimeter of the work area, activities must be shutdown.

4. All 15-minute readings must be recorded and be available for State (DEC and NYSDOH) personnel to review. Instantaneous readings, if any, used for decision purposes should also be recorded.

Particulate Monitoring, Response Levels, and Actions

Particulate concentrations should be monitored continuously at the upwind and downwind perimeters of the exclusion zone at temporary particulate monitoring stations. The particulate monitoring should be performed using real-time monitoring equipment capable of measuring particulate matter less than 10 micrometers in size (PM-10) and capable of integrating over a period of 15 minutes (or less) for comparison to the airborne particulate action level. The equipment must be equipped with an audible alarm to indicate exceedance of the action level. In addition, fugitive dust migration should be visually assessed during all work activities.

1. If the downwind PM-10 particulate level is 100 micrograms per cubic meter (mcg/m^3) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques must be employed. Work may continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 mcg/m³ above the upwind level and provided that no visible dust is migrating from the work area.

2. If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 mcg/m³ above the upwind level, work must be stopped and a re-evaluation of activities initiated. Work can resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 mcg/m³ of the upwind level and in preventing visible dust migration.

3. All readings must be recorded and be available for State (DEC and NYSDOH) and County Health personnel to review.

December 2009

Appendix 1B Fugitive Dust and Particulate Monitoring

A program for suppressing fugitive dust and particulate matter monitoring at hazardous waste sites is a responsibility on the remedial party performing the work. These procedures must be incorporated into appropriate intrusive work plans. The following fugitive dust suppression and particulate monitoring program should be employed at sites during construction and other intrusive activities which warrant its use:

1. Reasonable fugitive dust suppression techniques must be employed during all site activities which may generate fugitive dust.

2. Particulate monitoring must be employed during the handling of waste or contaminated soil or when activities on site may generate fugitive dust from exposed waste or contaminated soil. Remedial activities may also include the excavation, grading, or placement of clean fill. These control measures should not be considered necessary for these activities.

3. Particulate monitoring must be performed using real-time particulate monitors and shall monitor particulate matter less than ten microns (PM10) with the following minimum performance standards:

- (a) Objects to be measured: Dust, mists or aerosols;
- (b) Measurement Ranges: 0.001 to 400 mg/m3 (1 to 400,000 :ug/m3);

(c) Precision (2-sigma) at constant temperature: +/- 10 :g/m3 for one second averaging; and +/- 1.5 g/m3 for sixty second averaging;

(d) Accuracy: $\pm - 5\%$ of reading $\pm -$ precision (Referred to gravimetric calibration with SAE fine test dust (mmd= 2 to 3 :m, g= 2.5, as aerosolized);

- (e) Resolution: 0.1% of reading or 1g/m3, whichever is larger;
- (f) Particle Size Range of Maximum Response: 0.1-10;
- (g) Total Number of Data Points in Memory: 10,000;

(h) Logged Data: Each data point with average concentration, time/date and data point number

(i) Run Summary: overall average, maximum concentrations, time/date of maximum, total number of logged points, start time/date, total elapsed time (run duration), STEL concentration and time/date occurrence, averaging (logging) period, calibration factor, and tag number;

(j) Alarm Averaging Time (user selectable): real-time (1-60 seconds) or STEL (15 minutes), alarms required;

(k) Operating Time: 48 hours (fully charged NiCd battery); continuously with charger;

(1) Operating Temperature: -10 to 50° C (14 to 122° F);

(m) Particulate levels will be monitored upwind and immediately downwind at the working site and integrated over a period not to exceed 15 minutes.

4. In order to ensure the validity of the fugitive dust measurements performed, there must be appropriate Quality Assurance/Quality Control (QA/QC). It is the responsibility of the remedial party to adequately supplement QA/QC Plans to include the following critical features: periodic instrument calibration, operator training, daily instrument performance (span) checks, and a record keeping plan.

5. The action level will be established at 150 ug/m3 (15 minutes average). While conservative,

this short-term interval will provide a real-time assessment of on-site air quality to assure both health and safety. If particulate levels are detected in excess of 150 ug/m3, the upwind background level must be confirmed immediately. If the working site particulate measurement is greater than 100 ug/m3 above the background level, additional dust suppression techniques must be implemented to reduce the generation of fugitive dust and corrective action taken to protect site personnel and reduce the potential for contaminant migration. Corrective measures may include increasing the level of personal protection for on-site personnel and implementing additional dust suppression techniques (see paragraph 7). Should the action level of 150 ug/m3 continue to be exceeded work must stop and DER must be notified as provided in the site design or remedial work plan. The notification shall include a description of the control measures implemented to prevent further exceedances.

6. It must be recognized that the generation of dust from waste or contaminated soil that migrates off-site, has the potential for transporting contaminants off-site. There may be situations when dust is being generated and leaving the site and the monitoring equipment does not measure PM10 at or above the action level. Since this situation has the potential to allow for the migration of contaminants off-site, it is unacceptable. While it is not practical to quantify total suspended particulates on a real-time basis, it is appropriate to rely on visual observation. If dust is observed leaving the working site, additional dust suppression techniques must be employed. Activities that have a high dusting potential-such as solidification and treatment involving materials like kiln dust and lime--will require the need for special measures to be considered.

7. The following techniques have been shown to be effective for the controlling of the generation and migration of dust during construction activities:

- (a) Applying water on haul roads;
- (b) Wetting equipment and excavation faces;
- (c) Spraying water on buckets during excavation and dumping;
- (d) Hauling materials in properly tarped or watertight containers;
- (e) Restricting vehicle speeds to 10 mph;
- (f) Covering excavated areas and material after excavation activity ceases; and
- (g) Reducing the excavation size and/or number of excavations.

Experience has shown that the chance of exceeding the 150ug/m3 action level is remote when the above-mentioned techniques are used. When techniques involving water application are used, care must be taken not to use excess water, which can result in unacceptably wet conditions. Using atomizing sprays will prevent overly wet conditions, conserve water, and provide an effective means of suppressing the fugitive dust.

8. The evaluation of weather conditions is necessary for proper fugitive dust control. When extreme wind conditions make dust control ineffective, as a last resort remedial actions may need to be suspended. There may be situations that require fugitive dust suppression and particulate monitoring requirements with action levels more stringent than those provided above. Under some circumstances, the contaminant concentration and/or toxicity may require additional monitoring to protect site personnel and the public. Additional integrated sampling and chemical analysis of the dust may also be in order. This must be evaluated when a health and safety plan is developed and when appropriate suppression and monitoring requirements are established for protection of health and the environment.

TECHNICAL AND ADMINISTRATIVE GUIDANCE MEMORANDUM #4031

FUGITIVE DUST SUPPRESSION AND PARTICULATE MONITORING PROGRAM AT INACTIVE HAZARDOUS WASTE SITES

то:	Regional Hazardous Waste Remediation Engrs., Bur. Directors & Section Chiefs
FROM:	Michael J. O'Toole, Jr., Director, Division of Hazardous Waste Remediation
SUBJECT:	DIVISION TECHNICAL AND ADMINISTRATIVE GUIDANCE MEMORANDUM FUGITIVE DUST SUPRESSION AND PARTICULATE MONITORING PROGRAM AT INACTIVE HAZARDOUS WASTE SITES
-	

DATE: Oct 27, 1989

Michael J. O'Toole, Jr. (signed)

1. Introduction

Fugitive dust suppression, particulate monitoring, and subsequent action levels for such must be used and applied consistently during remedial activities at hazardous waste sites. This guidance provides a basis for developing and implementing a fugitive dust suppression and particulate monitoring program as an element of a hazardous waste site's health and safety program.

2. Background

Fugitive dust is particulate matter--a generic term for a broad class of chemically and physically diverse substances that exist as discrete particles, liquid droplets or solids, over a wide range of sizes--which becomes airborne and contributes to air quality as a nuisance and threat to human health and the environment.

On July 1, 1987, the United States Environmental Protection Agency (USEPA) revised the ambient air quality standard for particulates so as to reflect direct impact on human health by setting the standard for particulate matter less than ten microns in diameter (PM_{10}); this involves fugitive dust whether contaminated or not. Based upon an examination of air quality composition, respiratory tract deposition, and health effects, PM_{10} is considered conservative for the primary standard--that requisite to protect public health with an adequate margin of safety. The primary standards are 150 ug/m³ over a 24-hour averaging time and 50 ug/m³ over an annual averaging time. Both of these standards are to be averaged arithmetically.

There exists real-time monitoring equipment available to measure PM_{10} and capable of integrating over a period of six seconds to ten hours. Combined with an adequate fugitive dust suppression program, such equipment will aid in preventing the off-site migration of contaminated soil. It will also protect both on-site personnel from exposure to high levels of dust and the public around the site from any exposure to any dust. While specifically intended for the protection of on-site personnel as well as the public, this program is not meant to replace long-term monitoring which may be required given the contaminants inherent to the site and its air quality.

3. Guidance

A program for suppressing fugitive dust and monitoring particulate matter at hazardous waste sites can be developed without placing an undue burden on remedial activities while still being protective of health and environment. Since the responsibility for implementing this program ultimately will fall on the party performing the work, these procedures must be incorporated into appropriate work plans. The following fugitive dust suppression and particulate monitoring program will be employed at hazardous waste sites during construction and other activities which warrant its use:

- 1. Reasonable fugitive dust suppression techniques must be employed during all site activities which may generate fugitive dust.
- 2. Particulate monitoring must be employed during the handling of waste or contaminated soil or when activities on site may generate fugitive dust from exposed waste or contaminated soil. Such activities shall also include the excavation, grading, or placement of clean fill, and control measures therefore should be considered.
- 3. Particulate monitoring must be performed using real-time particulate monitors and shall monitor particulate matter less than ten microns (PM_{10}) with the following minimum performance standards:

Object to be measured: Dust, Mists, Aerosols Size range: <0.1 to 10 microns Sensitivity: 0.001 mg/m³ Range: 0.001 to 10 mg/m³ Overall Accuracy: $\pm 10\%$ as compared to gravimetric analysis of stearic acid or reference dust

Operating Conditions:

Temperature: 0 to 40°C Humidity: 10 to 99% Relative Humidity

Power: Battery operated with a minimum capacity of eight hours continuous operation

Automatic alarms are suggested.

Particulate levels will be monitored immediately downwind <u>at</u> the working site and integrated over a period not to exceed 15 minutes. Consequently, instrumentation

shall require necessary averaging hardware to accomplish this task; the P-5 Digital Dust Indicator as manufactured by MDA Scientific, Inc. or similar is appropriate.

- 4. In order to ensure the validity of the fugitive dust measurements performed, there must be appropriate Quality Assurance/Quality Control (QA/QC). It is the responsibility of the entity operating the equipment to adequately supplement QA/QC Plans to include the following critical features: periodic instrument calibration, operator training, daily instrument performance (span) checks, and a record keeping plan.
- 5. The action level will be established at 150 ug/m³ over the integrated period not to exceed 15 minutes. While conservative, this short-term interval will provide a real-time assessment of on-site air quality to assure both health and safety. If particulate levels are detected in excess of 150 ug/m³, the upwind background level must be measured immediately using the same portable monitor. If the working site particulate measurement is greater than 100 ug/m³ above the background level, additional dust suppression techniques must be implemented to reduce the generation of fugitive dust and corrective action taken to protect site personnel and reduce the potential for contaminant migration. Corrective measures may include increasing the level of personal protection for on-site personnel and implementing additional dust suppression techniques (see Paragraph 7). Should the action level of 150 ug/m³ be exceeded, the Division of Air Resources must be notified in writing within five working days; the notification shall include a description of the control measures implemented to prevent further exceedences.
- 6. It must be recognized that the generation of dust from waste or contaminated soil that migrates off-site, has the potential for transporting contaminants off-site. There may be situations when dust is being generated and leaving the site and the monitoring equipment does not measure PM_{10} at or above the action level. Since this situation

has the potential to migrate contaminants off-site, it is unacceptable. While it is not practical to quantify total suspended particulates on a real-time basis, it is appropriate to rely on visual observation. If dust is observed leaving the working site, additional dust suppression techniques must be employed. Activities that have a high dusting potential--such as solidification and treatment involving materials like kiln dust and lime--will require the need for special measures to be considered.

- 7. The following techniques have been shown to be effective for the controlling of the generation and migration of dust during construction activities:
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 - 2. Wetting equipment and excavation faces.
 - 3. Spraying water on buckets during excavation and dumping.
 - 4. Hauling materials in properly tarped or watertight containers.
 - 5. Restricting vehicle speeds to 10 mph.
 - 6. Covering excavated areas and material after excavation activity ceases.
 - 7. Reducing the excavation size and/or number of excavations.

Experience has shown that utilizing the above-mentioned dust suppression techniques, within reason as not to create excess water which would result in

unacceptable wet conditions, the chance of exceeding the 150 ug/m³ action level at hazardous waste site remediations is remote. Using atomizing sprays will prevent overly wet conditions, conserve water, and provide an effective means of suppressing the fugitive dust.

8. If the dust suppression techniques being utilized at the site do not lower particulates to an acceptable level (that is, below 150 ug/m³ and no visible dust), work must be suspended until appropriate corrective measures are approved to remedy the situation. Also, the evaluation of weather conditions will be necessary for proper fugitive dust control--when extreme wind conditions make dust control ineffective, as a last resort remedial actions may need to be suspended.

There may be situations that require fugitive dust suppression and particulate monitoring requirements with action levels more stringent than those provided above. Under some circumstances, the contaminant concentration and/or toxicity may require appropriate toxics monitoring to protect site personnel and the public. Additional integrated sampling and chemical analysis of the dust may also be in order. This must be evaluated when a health and safety plan is developed and when appropriate suppression and monitoring requirements are established for protection of health and the environment.

ATTACHMENT C CAMP Monitoring Forms

FIELD INSTRUMENT CALIBRATION

CORE ENVIRONMENTAL CONSULTANTS

Page	1	of

Project Name:	Date:
Project Address:	
Site Inspector:	
Calibration #1	
Instrument Make and Model No:	Time:
Calibration standard:	
Instrument reading:	
Calibration #2	
Instrument Make and Model No:	Time:
Calibration standard:	
Instrument reading:	
Calibration #3	
Instrument Make and Model No:	Time:
Calibration standard:	
Instrument reading:	
Calibration #4	
Instrument Make and Model No:	Time:
Calibration standard:	
Instrument reading:	
Calibration #5	
Instrument Make and Model No:	Time:
Calibration standard:	
Instrument reading:	
Calibration #6	
Instrument Make and Model No:	Time:
Calibration standard:	
Instrument reading:	

PARTICULATE MONITORING



Page <u>1</u> of ____

Project Name:	Date:
Project Address:	Weather:
Site Inspector:	Wind Speed/Direction:

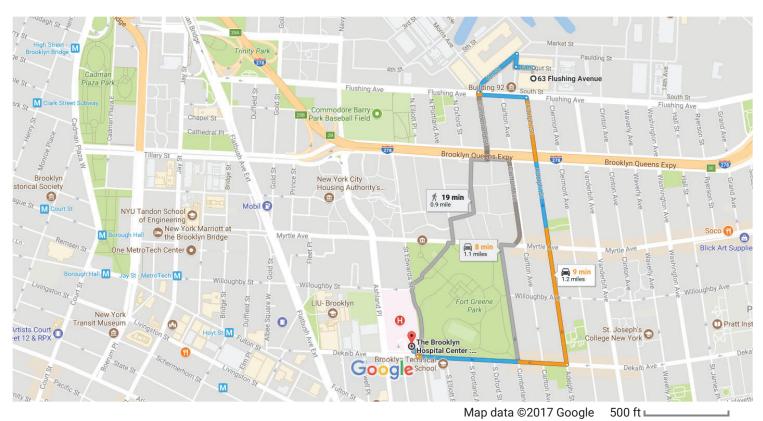
All concentrations in $\mu g/m^3$

Time	Upwind	Time	Downwind
	1		

ATTACHMENT D Hospital Route Map/Directions

Google Maps

63 Flushing Avenue, Brooklyn, NY to The Brooklyn Hospital Center : Emergency Room



63 Flushing Ave

Brooklyn, NY 11205

1	1.	Head west on Farragut St toward 7th Ave A Restricted usage road	
r	2.	Turn right onto 7th Ave A Restricted usage road	203 ft
4	3.	Turn left onto 6th St A Restricted usage road	148 ft
4	4.	Turn left onto Flushing Ave	0.1 mi
r ≯	5.	Turn right onto Adelphi St	0.1 mi
L,	6.	Turn right onto Dekalb Ave	0.0 mi
L,	7.	Turn right Destination will be on the right	0.5 m

ATTACHMENT B NYSDOH Generic Community Air Monitoring Plan

Appendix 1A New York State Department of Health Generic Community Air Monitoring Plan

Overview

A Community Air Monitoring Plan (CAMP) requires real-time monitoring for volatile organic compounds (VOCs) and particulates (i.e., dust) at the downwind perimeter of each designated work area when certain activities are in progress at contaminated sites. The CAMP is not intended for use in establishing action levels for worker respiratory protection. Rather, its intent is to provide a measure of protection for the downwind community (i.e., off-site receptors including residences and businesses and on-site workers not directly involved with the subject work activities) from potential airborne contaminant releases as a direct result of investigative and remedial work activities. The action levels specified herein require increased monitoring, corrective actions to abate emissions, and/or work shutdown. Additionally, the CAMP helps to confirm that work activities did not spread contamination off-site through the air.

The generic CAMP presented below will be sufficient to cover many, if not most, sites. Specific requirements should be reviewed for each situation in consultation with NYSDOH to ensure proper applicability. In some cases, a separate site-specific CAMP or supplement may be required. Depending upon the nature of contamination, chemical- specific monitoring with appropriately-sensitive methods may be required. Depending upon the proximity of potentially exposed individuals, more stringent monitoring or response levels than those presented below may be required. Special requirements will be necessary for work within 20 feet of potentially exposed individuals or structures and for indoor work with co-located residences or facilities. These requirements should be determined in consultation with NYSDOH.

Reliance on the CAMP should not preclude simple, common-sense measures to keep VOCs, dust, and odors at a minimum around the work areas.

Community Air Monitoring Plan

Depending upon the nature of known or potential contaminants at each site, real-time air monitoring for VOCs and/or particulate levels at the perimeter of the exclusion zone or work area will be necessary. Most sites will involve VOC and particulate monitoring; sites known to be contaminated with heavy metals alone may only require particulate monitoring. If radiological contamination is a concern, additional monitoring requirements may be necessary per consultation with appropriate DEC/NYSDOH staff.

Continuous monitoring will be required for all <u>ground intrusive</u> activities and during the demolition of contaminated or potentially contaminated structures. Ground intrusive activities include, but are not limited to, soil/waste excavation and handling, test pitting or trenching, and the installation of soil borings or monitoring wells.

Periodic monitoring for VOCs will be required during <u>non-intrusive</u> activities such as the collection of soil and sediment samples or the collection of groundwater samples from existing monitoring wells. "Periodic" monitoring during sample collection might reasonably consist of taking a reading upon arrival at a sample location, monitoring while opening a well cap or

overturning soil, monitoring during well baling/purging, and taking a reading prior to leaving a sample location. In some instances, depending upon the proximity of potentially exposed individuals, continuous monitoring may be required during sampling activities. Examples of such situations include groundwater sampling at wells on the curb of a busy urban street, in the midst of a public park, or adjacent to a school or residence.

VOC Monitoring, Response Levels, and Actions

Volatile organic compounds (VOCs) must be monitored at the downwind perimeter of the immediate work area (i.e., the exclusion zone) on a continuous basis or as otherwise specified. Upwind concentrations should be measured at the start of each workday and periodically thereafter to establish background conditions, particularly if wind direction changes. The monitoring work should be performed using equipment appropriate to measure the types of contaminants known or suspected to be present. The equipment should be calibrated at least daily for the contaminant(s) of concern or for an appropriate surrogate. The equipment should be capable of calculating 15-minute running average concentrations, which will be compared to the levels specified below.

1. If the ambient air concentration of total organic vapors at the downwind perimeter of the work area or exclusion zone exceeds 5 parts per million (ppm) above background for the 15-minute average, work activities must be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities can resume with continued monitoring.

2. If total organic vapor levels at the downwind perimeter of the work area or exclusion zone persist at levels in excess of 5 ppm over background but less than 25 ppm, work activities must be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities can resume provided that the total organic vapor level 200 feet downwind of the exclusion zone or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less - but in no case less than 20 feet, is below 5 ppm over background for the 15-minute average.

3. If the organic vapor level is above 25 ppm at the perimeter of the work area, activities must be shutdown.

4. All 15-minute readings must be recorded and be available for State (DEC and NYSDOH) personnel to review. Instantaneous readings, if any, used for decision purposes should also be recorded.

Particulate Monitoring, Response Levels, and Actions

Particulate concentrations should be monitored continuously at the upwind and downwind perimeters of the exclusion zone at temporary particulate monitoring stations. The particulate monitoring should be performed using real-time monitoring equipment capable of measuring particulate matter less than 10 micrometers in size (PM-10) and capable of integrating over a period of 15 minutes (or less) for comparison to the airborne particulate action level. The equipment must be equipped with an audible alarm to indicate exceedance of the action level. In addition, fugitive dust migration should be visually assessed during all work activities.

1. If the downwind PM-10 particulate level is 100 micrograms per cubic meter (mcg/m^3) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques must be employed. Work may continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 mcg/m³ above the upwind level and provided that no visible dust is migrating from the work area.

2. If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 mcg/m³ above the upwind level, work must be stopped and a re-evaluation of activities initiated. Work can resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 mcg/m³ of the upwind level and in preventing visible dust migration.

3. All readings must be recorded and be available for State (DEC and NYSDOH) and County Health personnel to review.

December 2009

Appendix 1B Fugitive Dust and Particulate Monitoring

A program for suppressing fugitive dust and particulate matter monitoring at hazardous waste sites is a responsibility on the remedial party performing the work. These procedures must be incorporated into appropriate intrusive work plans. The following fugitive dust suppression and particulate monitoring program should be employed at sites during construction and other intrusive activities which warrant its use:

1. Reasonable fugitive dust suppression techniques must be employed during all site activities which may generate fugitive dust.

2. Particulate monitoring must be employed during the handling of waste or contaminated soil or when activities on site may generate fugitive dust from exposed waste or contaminated soil. Remedial activities may also include the excavation, grading, or placement of clean fill. These control measures should not be considered necessary for these activities.

3. Particulate monitoring must be performed using real-time particulate monitors and shall monitor particulate matter less than ten microns (PM10) with the following minimum performance standards:

- (a) Objects to be measured: Dust, mists or aerosols;
- (b) Measurement Ranges: 0.001 to 400 mg/m3 (1 to 400,000 :ug/m3);

(c) Precision (2-sigma) at constant temperature: +/- 10 :g/m3 for one second averaging; and +/- 1.5 g/m3 for sixty second averaging;

(d) Accuracy: $\pm - 5\%$ of reading $\pm -$ precision (Referred to gravimetric calibration with SAE fine test dust (mmd= 2 to 3 :m, g= 2.5, as aerosolized);

- (e) Resolution: 0.1% of reading or 1g/m3, whichever is larger;
- (f) Particle Size Range of Maximum Response: 0.1-10;
- (g) Total Number of Data Points in Memory: 10,000;

(h) Logged Data: Each data point with average concentration, time/date and data point number

(i) Run Summary: overall average, maximum concentrations, time/date of maximum, total number of logged points, start time/date, total elapsed time (run duration), STEL concentration and time/date occurrence, averaging (logging) period, calibration factor, and tag number;

(j) Alarm Averaging Time (user selectable): real-time (1-60 seconds) or STEL (15 minutes), alarms required;

(k) Operating Time: 48 hours (fully charged NiCd battery); continuously with charger;

(1) Operating Temperature: -10 to 50° C (14 to 122° F);

(m) Particulate levels will be monitored upwind and immediately downwind at the working site and integrated over a period not to exceed 15 minutes.

4. In order to ensure the validity of the fugitive dust measurements performed, there must be appropriate Quality Assurance/Quality Control (QA/QC). It is the responsibility of the remedial party to adequately supplement QA/QC Plans to include the following critical features: periodic instrument calibration, operator training, daily instrument performance (span) checks, and a record keeping plan.

5. The action level will be established at 150 ug/m3 (15 minutes average). While conservative,

this short-term interval will provide a real-time assessment of on-site air quality to assure both health and safety. If particulate levels are detected in excess of 150 ug/m3, the upwind background level must be confirmed immediately. If the working site particulate measurement is greater than 100 ug/m3 above the background level, additional dust suppression techniques must be implemented to reduce the generation of fugitive dust and corrective action taken to protect site personnel and reduce the potential for contaminant migration. Corrective measures may include increasing the level of personal protection for on-site personnel and implementing additional dust suppression techniques (see paragraph 7). Should the action level of 150 ug/m3 continue to be exceeded work must stop and DER must be notified as provided in the site design or remedial work plan. The notification shall include a description of the control measures implemented to prevent further exceedances.

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7. The following techniques have been shown to be effective for the controlling of the generation and migration of dust during construction activities:

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B | N | Y

Brooklyn Navy Yard Development Corporation BrooklynNavyYard.org

Building 77 141 Flushing Ave, Suite 801 Brooklyn, NY 11205

[EXHIBIT K SITE MANAGEMENT PLAN (SMP)

This project is located within the Voluntary Cleanup Agreement (VCA) area of the Brooklyn Navy Yard (BNY) site. Therefore, the Bidder must comply with all BNY Site Management Plan (SMP) requirements.

A copy of the BNY Site Management Plan (SMP) can be accessed by using the link below:

https://brooklynnavyyard-

my.sharepoint.com/shared?id=%2Fteams%2FOpsProjects%2FShared%20Documents%2FSite%20Management%20Plan%20%28SMP %29%2FSite%20Management%20Plan&listurl=https%3A%2F%2Fbrooklynnavyyard%2Esharepoint%2Ecom%2Fteams%2FOpsProjects %2FShared%20Documents



Brooklyn Navy Yard Development Corporation BrooklynNavyYard.org

Building 77 141 Flushing Ave, Suite 801 Brooklyn, NY 11205

<u>EXHIBIT L</u> FEMA RIDER

[To attach]

UNIFORM FEDERAL CONTRACT PROVISIONS RIDER FOR FEDERALLY FUNDED PROCUREMENT CONTRACTS (Version 01.20.2021)

[Instructions to Agencies: This Uniform Federal Contract Provisions Rider for Federally Funded Procurement Contracts ("Rider") must be attached to all federally funded procurement contracts (of any dollar amount) that are subject to 2 CFR Part 200 (Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards). This Rider does not apply to subrecipient or subaward agreements. Procurement contracts funded by HUD's CDBG Program, CDBG-DR Program, or by FEMA must also include the program-specific rider.]

- A. *Definitions*. As used in this Rider:
 - (1) "Awarding Entity" means the entity awarding the Contract. The Awarding Entity may be the City or a contractor at any tier.
 - (2) "City" means the City of New York.
 - (3) "Commissioner" means the head of the City agency entering into this Contract.
 - (4) "Construction" means the building, rehabilitation, alteration, conversion, extension, demolition, painting or repair of any improvement to real property.
 - (5) "Contract" refers to the contract or the agreement between the Awarding Entity and the Contractor.
 - (6) "Contractor" means the entity performing the services pursuant to a Contract.
 - (7) "Federal Agency" means the U.S. agency or agencies funding this Contract in whole or in part.
 - (8) "Government" means the U.S. government.
 - (9) "Rider" means this Uniform Federal Contract Provisions Rider.
- **B.** *Termination and Remedies for Breach of Contract.* The following provisions concerning remedies for breach of contract and termination apply to Contracts between the City and the City's Contractor.
 - (1) **Remedies for Breach of Contract.** If the Contractor violates or breaches the Contract, the City may avail itself of any or all of the remedies provided for elsewhere in this Contract. If there are no remedies provided for elsewhere in this Contract, the City may avail itself of any or all of the following remedies.

After declaring the Contractor in default pursuant to the procedures in paragraph (a) of subdivision (2) of this section (B) below, the City may (i) withhold payment for unsatisfactory services, (ii) suspend or terminate the Contract in whole or in part; and/or (iii) have the services under this Contract completed by such means and in such manner, by contract procured with or without competition, or otherwise, as the City may deem advisable in accordance with all applicable Contract provisions and law. After

completion of the services under this Contract, the City shall certify the expense incurred in such completion, which shall include the cost of procuring that contract. Should the expense of such completion, as certified by the City, exceed the total sum which would have been payable under the Contract if it had been completed by the Contractor, any excess shall be promptly paid by the Contractor upon demand by the City. The excess expense of such completion, including any and all related and incidental costs, as so certified by the City may be charged against and deducted out of monies earned by the Contractor.

- (2) **Termination.** The City shall have the right to terminate the Contract in whole or in part for cause, for convenience, due to force majeure, or due to reductions in federal funding. If the Contract does not include termination provisions elsewhere, the following termination provisions apply:
 - a. Termination for Cause. The City shall have the right to terminate the Contract, in whole or in part, for cause upon a determination that the Contractor is in default of the Contract. Unless a shorter time is determined by the City to be necessary, the City shall effect termination according to the following procedure:
 - i. Notice to Cure. The City shall give written notice of the conditions of default signed by the Commissioner, setting forth the ground or grounds upon which such default is declared ("Notice to Cure"). The Contractor shall have ten (10) days from receipt of the Notice to Cure or any longer period that is set forth in the Notice to Cure to cure the default. The Commissioner may temporarily suspend services under the Contract pending the outcome of the default proceedings pursuant to this section.
 - ii. Opportunity to be Heard. If the conditions set forth in the Notice to Cure are not cured within the period set forth in the Notice to Cure, the Commissioner may declare the Contractor in default. Before the Commissioner may exercise his or her right to declare the Contractor in default, the Contractor must be given an opportunity to be heard upon not less than five (5)business days' notice. The Commissioner may, in his or her discretion, provide for such opportunity to be in writing or in person. Such opportunity to be heard shall not occur prior to the end of the cure period but notice of such opportunity to be heard may be given prior to the end of the cure period and may be given contemporaneously with the Notice to Cure.
 - iii. Notice of Termination. After an opportunity to be heard, the Commissioner may terminate the Contract, in whole or in part, upon finding the Contractor in default. The Commissioner shall give the Contractor written notice of such termination ("Notice of Termination"), specifying -2-

the applicable provision(s) under which the Contract is terminated and the effective date of termination. If no date is specified in the Notice of Termination, the termination shall be effective either 10 calendar days from the date the notice is personally delivered or 15 calendar days from the date Notice of Termination is sent by another method. The Notice of Termination shall be personally delivered, sent by certified mail return receipt requested, or sent by fax and deposited in a post office box regularly maintained by the United States Postal Service in a postage pre-paid envelope.

iv. *Grounds for Default.* The City shall have the right to declare the Contractor in default:

1. Upon a breach by the Contractor of a material term or condition of this Contract, including unsatisfactory performance of the services;

2. Upon insolvency or the commencement of any proceeding by or against the Contractor, either voluntarily or involuntarily, under the Bankruptcy Code or relating to the insolvency, receivership, liquidation, or composition of the Contractor for the benefit of creditors;

3. If the Contractor refuses or fails to proceed with the services under the Contract when and as directed by the Commissioner;

4. If the Contractor or any of its officers, directors, partners, five percent (5%) or greater shareholders, principals, or other employee or person substantially involved in its activities are indicted or convicted after execution of the Contract under any state or federal law of any of the following:

a. a criminal offense incident to obtaining or attempting to obtain or performing a public or private contract;

b. fraud, embezzlement, theft, bribery, forgery, falsification, or destruction of records, or receiving stolen property;

c. a criminal violation of any state or federal antitrust law;

d. violation of the Racketeer Influence and Corrupt Organization Act, 18 U.S.C. § 1961 et seq., or the Mail Fraud Act, 18 U.S.C. § 1341 et seq., for acts in connection with the submission of bids or proposals for a public or private contract;

e. conspiracy to commit any act or omission that would constitute grounds for conviction or liability under any statute described in subparagraph (d) above; or

f. an offense indicating a lack of business integrity that seriously and directly affects responsibility as a City vendor.

5. If the Contractor or any of its officers, directors, partners, five percent (5%) or greater shareholders, principals, or other employee or person substantially involved in its activities are subject to a judgment of civil liability under any state or federal antitrust law for acts or omissions in connection with the submission of bids or proposals for a public or private contract; or

6. If the Contractor or any of its officers, directors, partners, five percent (5%) or greater shareholders, principals, or other employee or person substantially involved in its activities makes or causes to be made any false, deceptive, or fraudulent material statement, or fail to make a required material statement in any bid, proposal, or application for City or other government work.

- v. *Basis of Settlement.* The City shall not incur or pay any further obligation pursuant to this Contract beyond the termination date set by the City in its Notice of Termination. The City shall pay for satisfactory services provided in accordance with this Contract prior to the termination date. In addition, any obligation necessarily incurred by the Contractor on account of this Contract prior to receipt of notice of termination and falling due after the termination date shall be paid by the City in accordance with the terms of this Contract. In no event shall such obligation be construed as including any lease or other occupancy agreement, oral or written, entered into between the Contractor and its landlord.
- b. **Termination for Convenience**. The City shall have the right to terminate the Contract for convenience, by providing written notice ("Notice of Termination") according to the following procedure. The Notice of Termination shall specify the applicable provision(s) under which the Contract is terminated and the effective date of termination, which shall be not less than 10 calendar days from the date the notice is personally delivered or 15 days from the date the Notice of Termination is sent by another method. The Notice of Termination shall be personally delivered, sent by certified mail return receipt requested, or sent by fax and deposited in a post office box regularly maintained by the United States Postal Service in a postage pre-paid envelope. The basis of

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settlement shall be as provided for in subparagraph (v) of paragraph (a) of subdivision (2) of this section (B), above.

c. Termination due to Force Majeure

- i. For purposes of this Contract, a force majeure event is an act or event beyond the control and without any fault or negligence of the Contractor ("Force Majeure Event"). Force Majeure Events may include, but are not limited to, fire, flood, earthquake, storm or other natural disaster, civil commotion, war, terrorism, riot, and labor disputes not brought about by any act or omission of the Contractor.
- ii. In the event the Contractor cannot comply with the terms of the Contract (including any failure by the Contractor to make progress in the performance of the services) because of a Force Majeure Event, then the Contractor Commissioner to mav ask the excuse the nonperformance and/or terminate the Contract. If the Commissioner, in his or her reasonable discretion, determines that the Contractor cannot comply with the terms of the Contract because of a Force Majeure Event, then the Commissioner shall excuse the nonperformance and may terminate the Contract. Such a termination shall be deemed to be without cause.
- iii. If the City terminates the Contract due to a Force Majeure Event, the basis of settlement shall be as provided for in subparagraph (v) of paragraph (a) of subdivision (2) of this section (B), above.

d. Termination due to Reductions in Federal Funding

i. This Contract is funded in whole or in part by funds secured from the Federal government. Should the Federal government reduce or discontinue such funds, the City shall have, in its sole discretion, the right to terminate this Contract in whole or in part, or to reduce the funding and/or level of services of this Contract caused by such action by the Federal government, including, in the case of the reduction option, but not limited to, the reduction or elimination of programs, services or service components; the reduction or elimination of contract-reimbursable staff or staff-hours, and corresponding reductions in the budget of this Contract and in the total amount payable under this Contract. Any reduction in funds pursuant to this paragraph shall be accompanied by an appropriate reduction in the services performed under this Contract.

- ii. In the case of the reduction option referred to in subparagraph (i), above, any such reduction shall be effective as of the date set forth in a written notice thereof to the Contractor, which shall be not less than 30 calendar days from the date of such notice. Prior to sending such notice of reduction, the City shall advise the Contractor that such option is being exercised and afford the Contractor an opportunity to make within seven calendar days any suggestion(s) it may have as to which program(s), service(s), service component(s), staff or staff-hours might be reduced or eliminated, provided, however, that the City shall not be bound to utilize any of the Contractor's suggestions and that the City shall have sole discretion as to how to effectuate the reductions.
- iii. If the City reduces funding pursuant to this paragraph (d), the basis of settlement shall be as provided for in subparagraph (v) of paragraph (a) of subdivision (2) of this section (B), above.
- **C. Standard Provisions.** The Contractor shall comply with, include in its subcontracts, and cause its subcontractors to comply with the following provisions, as applicable:
 - (1) *Reporting.* Contractor shall be required to produce and deliver such reports relating to the services performed under the Contract as may be required by the Awarding Entity, City or any other State or Federal governmental agency with jurisdiction.
 - (2) *Non-Discrimination*. Contractor shall not violate any Federal, State, or City law prohibiting discrimination concerning employment, the provision of services, and, if applicable, housing, funded by this Contract.
 - (3) Environmental Protection. If the Contract is in excess of \$150,000, the Contractor shall comply with all applicable standards, orders, or regulations issued under the Clean Air Act (42 U.S.C. § 7401-7671q), Federal Water Pollution Control Act as amended (33 U.S.C. §§ 1251-1387), Section 508 of the Clean Water Act (33 U.S.C. § 1368), Executive Order 11738, and Environmental Protection Agency regulations (provisions of 40 CFR Part 50 and 2 CFR Part 1532 related to the Clean Air Act and Clean Water Act). Violations must be reported to the Federal Agency and the Regional Office of the Environmental Protection Agency (EPA). The Contractor shall include this provision in all subcontracts.
 - (4) *Energy Efficiency*. The Contractor shall comply with mandatory standards and policies relating to energy efficiency that are contained in the New York State energy conservation plan issued in compliance with the Energy Policy Conservation Act (Pub. L. 94-163).
 - (5) Debarment. The Contractor certifies that neither it nor its principals or affiliates are currently in a state of debarment, suspension, exclusion, disqualification, or other ineligible status as a result of prior performance, failure, fraud, or violation of City or New York State laws. The Contractor further certifies that neither it nor its principals or affiliates are debarred, suspended, excluded, disqualified, or otherwise ineligible for participation in Federal assistance programs. The City reserves the right to terminate this

Contract if knowledge of debarment, suspension, exclusion, disqualification or other ineligibility has been withheld by the Contractor.

- (6) Lobbying. The Contractor certifies, to the best of its knowledge and belief, that:
 - (a) No Federal appropriated funds have been paid or will be paid, by or on behalf of it, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement;
 - (b) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, it will complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," (which is available on the HUD website or here: https://www.hudexchange.info/resources/documents/HUD-Form-Sflll.pdf) in accordance with its instructions; and
 - (c) It will require that the language of this Section (C)(6) be included in the award documents for all subcontracts at all tiers.
 - (d) This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by 31 U.S.C. § 1352. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.
- (7) Solid Waste Disposal Act. Pursuant to 2 CFR § 200.323, Contractor must comply with section 6002 of the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act. The requirements of Section 6002 include procuring only items designated in guidelines of the Environmental Protection Agency (EPA) at 40 CFR Part 247 that contain the highest percentage of recovered materials practicable, consistent with maintaining a satisfactory level of competition, where the purchase price of the item exceeds \$ 10,000 or the value of the quantity acquired during the preceding fiscal year exceeded \$ 10,000; procuring solid waste management services in a manner that maximizes energy and resource recovery; and establishing an affirmative procurement program for procurement of recovered materials identified in the EPA guidelines.
- (8) Prohibition on certain telecommunications and video surveillance services or equipment.
 - (a) The Contractor is prohibited from obligating or expending loan or grant funds to:
 - (1) Procure or obtain;
 - (2) Extend or renew a contract to procure or obtain; or
 - (3) Enter into a contract (or extend or renew a contract) to procure or

telecommunications equipment or services as a substantial or essential component of any system, or as critical technology as part of any system. As described in Public Law 115–232, section 889, covered telecommunications equipment is telecommunications equipment produced by Huawei Technologies Company or ZTE Corporation (or any subsidiary or affiliate of such entities).

(i) For the purpose of public safety, security of government facilities, physical security surveillance of critical infrastructure, and other national security purposes, video surveillance and telecommunications equipment produced by Hytera Communications Corporation, Hangzhou Hikvision Digital Technology Company, or Dahua Technology Company (or any subsidiary or affiliate of such entities).

(ii) Telecommunications or video surveillance services provided by such entities or using such equipment.

(iii) Telecommunications or video surveillance equipment or services produced or provided by an entity that the Secretary of Defense, in consultation with the Director of the National Intelligence or the Director of the Federal Bureau of Investigation, reasonably believes to be an entity owned or controlled by, or otherwise connected to, the government of a covered foreign country.

- (b) In implementing the prohibition under Public Law 115–232, section 889, subsection (f), paragraph (1), heads of executive agencies administering loan, grant, or subsidy programs shall prioritize available funding and technical support to assist affected businesses, institutions and organizations as is reasonably necessary for those affected entities to transition from covered communications equipment and services, to procure replacement equipment and services, and to ensure that communications service to users and customers is sustained.
- (c) The Contractor's attention is directed to Public Law 115–232, section 889 for additional information.
- (d) The Contractor's attention is directed to § 200.471.

(9) Domestic preferences for procurements.

- (a) As appropriate and to the extent consistent with law, the Contractor should, to the greatest extent practicable under a Federal award, provide a preference for the purchase, acquisition, or use of goods, products, or materials produced in the United States (including but not limited to iron, aluminum, steel, cement, and other manufactured products). The requirements of this section must be included in all subawards including all contracts and purchase orders for work or products under this award.
- (b) For purposes of this section:

(1) "Produced in the United States" means, for iron and steel products, that all manufacturing processes, from the initial melting stage through the application of coatings, occurred in the United States.

(2) "Manufactured products" means items and construction materials composed in whole or in part of nonferrous metals such as aluminum; plastics and polymer-based products such as polyvinyl chloride pipe; aggregates such as concrete; glass, including optical fiber; and lumber.

- (10) *Documentation of Costs.* All costs shall be supported by properly executed payrolls, time records, invoices, or vouchers, or other official documentation evidencing in proper detail the nature and propriety of the charges. All checks, payrolls, invoices, contracts, vouchers, orders or other accounting documents, pertaining in whole or in part to the Agreement, shall be clearly identified and regularly accessible.
- (11) *Records Retention.* The Contractor shall retain all books, documents, papers, and records relating to the services performed under the Contract in accordance with 2 C.F.R. §200.334.
- (12) *Records Access.* The Contractor shall grant access to the City, State or any other pass-through entity, the Federal Agency, Inspectors General, and/or the Comptroller General of the United States, or any of their duly authorized representatives, to any books, documents, papers, and/or records of the Contractor that are pertinent to the Contract for the purpose of making audits, examinations, excerpts, and transcripts. The right also includes timely and reasonable access to the Contractor's personnel for the purpose of interview and discussion related to such documents. The rights of access in this section are not limited to the required retention period but last as long as the records are retained.
- (13) Small Firms, M/WBE Firms, and Labor Surplus Area Firms. Contractor shall take the following affirmative steps in the letting of subcontracts, if subcontracts are to be let, in order to ensure that minority firms, women's business enterprises, and labor surplus area firms are used when possible:
 - a. Placing qualified small and minority businesses and women's business enterprises on solicitation lists;
 - b. Assuring that small and minority businesses, and women's business enterprises are solicited whenever they are potential sources;
 - c. Dividing total requirements, when economically feasible, into smaller tasks or quantities to permit maximum participation by small and minority businesses, and women's business enterprises;
 - d. Establishing delivery schedules, where the requirement permits, which encourage participation by small and minority businesses, and women's business enterprises; and
 - e. Using the services and assistance of the Small Business Administration, and the Minority Business Development Agency of the Department of Commerce.

- a. Pursuant to 2 CFR § 200.315, the Government reserves a royalty-free, non-exclusive, and irrevocable right to obtain, reproduce, publish, or otherwise use, and to authorize others to use, for Government purposes: (a) the copyright in any work developed under the Contract or subcontract; and (b) any rights of copyright to which a Contractor purchases ownership with grant support.
- b. Any reports, documents, data, photographs, deliverables, and/or other materials produced pursuant to the Contract ("Copyrightable Materials"), and any and all drafts and/or other preliminary materials in any format related to such items produced pursuant to the contract, shall upon their creation become the exclusive property of the City. The Copyrightable Materials shall be considered "work-made-for-hire" within the meaning and purview of Section 101 of the United States Copyright Act, 17 U.S.C. § 101, and the City shall be the copyright owner thereof and of all aspects, elements and components thereof in which copyright protection might exist. To the extent that the Copyrightable Materials do not qualify as "work-made-for-hire," the Contractor hereby irrevocably transfers, assigns and conveys exclusive copyright ownership in and to the Copyrightable Materials to the City, free and clear of any liens, claims, or other encumbrances. The Contractor shall retain no copyright or intellectual property interest in the Copyrightable Materials. The Copyrightable Materials shall be used by the Contractor for no purpose other than in the performance of this Contract without the prior written permission of the City. The City may grant the Contractor a license to use the Copyrightable Materials on such terms as determined by the City and set forth in the license.
- c. The Contractor acknowledges that the City may, in its sole discretion, register copyright in the Copyrightable Materials with the United States Copyright Office or any other government agency authorized to grant copyright registrations. The Contractor shall fully cooperate in this effort, and agrees to provide any and all documentation necessary to accomplish this.
- d. The Contractor represents and warrants that the Copyrightable Materials: (i) are wholly original material not published elsewhere (except for material that is in the public domain); (ii) do not violate any copyright law; (iii) do not constitute defamation or invasion of the right of privacy or publicity; and (iv) are not an infringement, of any kind, of the rights of any third party. To the extent that the Copyrightable Materials incorporate any non-original material, the Contractor has obtained all necessary permissions and clearances, in writing, for the use of such non-original material under this Contract, copies

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of which shall be provided to the City upon execution of this Contract.

- e. The Contractor shall promptly and fully report to the City any discovery or invention arising out of or developed in the course of performance of this Contract and the Contractor shall promptly and fully report to the Government to make a determination as to whether patent protection on such invention shall be sought and how the rights in the invention or discovery, including rights under any patent issued thereon, shall be disposed of and administered in order to protect the public interest.
- f. If the Contractor publishes a work dealing with any aspect of performance under this Agreement, or with the results of such performance, the City shall have a royalty-free, non-exclusive irrevocable license to reproduce, publish, or otherwise use such work for City governmental purposes.
- **D.** Special Provisions for Construction Contracts. If this Contract involves Construction work, design for Construction, or Construction services, all such work or services performed by the Contractor and its subcontractors shall be subject to the following requirements in addition to those set forth above in paragraphs (A), (B), and (C):

(1) Federal Labor Standards. The Contractor will comply with the following:

- a. The Davis-Bacon Act (40 U.S.C. §§ 3141-3148): <u>If required by</u> <u>the federal program legislation</u>, in Construction contracts involving an excess of \$2000, <u>and subject to any other federal</u> <u>program limitations</u>, all laborers and mechanics must be paid at a rate not less than those determined by the Secretary of Labor to be prevailing for the City, which rates are to be provided by the City. These wage rates are a federally mandated minimum only, and will be superseded by any State or City requirement mandating higher wage rates. The Contractor also agrees to comply with Department of Labor Regulations pursuant to the Davis-Bacon Act found in 29 CFR Parts 1, 3, 5 and 7 which enforce statutory labor standards provisions.
- b. If required by the federal program legislation and subject to any other federal program limitations. Sections 103 and 107 of the Contract Work Hours and Safe Standards Act (40 U.S.C. §§ 3701-3708), which provides that no laborer or mechanic shall be required or permitted to work more than eight hours in a calendar day or in excess of forty hours in any workweek, unless such laborer or mechanic is paid at an overtime rate of 1½ times his/her basic rate of pay for all hours worked in excess of these limits, under any Construction contract costing in excess of \$2000. In the event of a violation of this provision, the Contractor shall not only be liable to any affected employee for

his/her unpaid wages, but shall be additionally liable to the United States for liquidated damages.

c. Copeland Anti-Kickback Act: <u>If required by the federal program legislation and subject to any other federal program limitations</u>: (i) the Contractor shall comply with 18 U.S.C. § 874, 40 U.S.C. § 3145, and the requirements of 29 C.F.R. Part 3 as may be applicable, which are incorporated by reference into this Contract; (ii) The Contractor or subcontractor shall insert in any subcontracts the language contained in (i) of this subsection and also a clause requiring the subcontractors to include the language in subsection (i) in any lower tier subcontracts. The Contractor or lower tier subcontractor of this subsection; and (iii) A breach of this subsection may be grounds for termination of the Contract, and for debarment as a contractor or subcontractor as provided in 29 C.F.R. § 5.12.

d. If this Contract involves Construction work, design for Construction, or Construction services, a more complete detailed statement of Federal Labor Standards annexed hereto as FEDERAL EXHIBIT 2. If there is a conflict between the provisions of this Article D and FEDERAL EXHIBIT 2, the stricter standard shall be controlling.

(2) Equal Employment Opportunity. Executive Order 11246, as amended, and as supplemented in Department of Labor regulations (41 CFR chapter 60) for Construction contracts or subcontracts in excess of \$10,000. The Contractor shall include the notice found at FEDERAL EXHIBIT I in all Construction subcontracts. For the purposes of the Equal Opportunity Construction Contract Specifications and Clause below, the term "Construction Work" means the construction, rehabilitation, alteration, conversion, extension, demolition or repair of buildings, highways, or other changes or improvements to real property, including facilities providing utility services. The term also includes the supervision, inspection, and other onsite functions incidental to the actual construction.

Standard Federal Equal Employment Opportunity Construction Contract Specifications for Contracts and Subcontracts in Excess of \$10,000.

1. As used in these specifications:

a. "Covered area" means the geographical area described in the solicitation from which this Contract resulted;

b. "Director" means Director, Office of Federal Contract Compliance Programs, United States Department of Labor, or any person to whom the Director delegates authority;

c. "Employer identification number" means the Federal Social Security number used on the Employer's Quarterly Federal Tax Return, U.S. Treasury Department Form 941.

d. "Minority" includes:

(i) Black (all persons having origins in any of the Black African racial groups not of Hispanic origin);

(ii) Hispanic (all persons of Mexican, Puerto Rican, Cuban, Central or South American or other Spanish Culture or origin, regardless of race);

(iii) Asian and Pacific Islander (all persons having origins in any of the original peoples of the Far East, Southeast Asia, the Indian Subcontinent, or the Pacific Islands); and

(iv) American Indian or Alaskan Native (all persons having origins in any of the original peoples of North America and maintaining identifiable tribal affiliations through membership and participation or community identification).

2. Whenever the Contractor, or any subcontractor at any tier, subcontracts a portion of the work involving any Construction trade, it shall physically include in each subcontract in excess of \$10,000 the provisions of these specifications and the Notice which contains the applicable goals for minority and female participation and which is set forth in the solicitations from which this Contract resulted.

3. If the Contractor is participating (pursuant to 41 CFR 60-4.5) in a Hometown Plan approved by the U.S. Department of Labor in the covered area either individually or through an association, its affirmative action obligations on all work in the Plan area (including goals and timetables) shall be in accordance with that Plan for those trades which have unions participating in the Plan. Contractors must be able to demonstrate their participation in and compliance with the provisions of any such Hometown Plan. Each Contractor or subcontractor participating in an approved Plan is individually required to comply with its obligations under the EEO clause, and to make a good faith effort to achieve each goal under the Plan in each trade in which it has employees. The overall good faith performance by other Contractors or subcontractor's failure to take good faith efforts to achieve the Plan goals and timetables.

4. The Contractor shall implement the specific affirmative action standards provided in paragraphs 7 a through p of these specifications. The goals set forth in the solicitation from which this Contract resulted are expressed as percentages of the total hours of employment and training of minority and female utilization the Contractor should reasonably be able to achieve in each Construction trade in which it has employees in the covered area. Covered Construction Contractors performing Construction Work in geographical areas where they do not have a Federal or federally assisted Construction contract shall apply the minority and female goals established for the geographical areas where the work is being performed. Goals are published periodically in the Federal Register in notice form, and such notices may be obtained from any Office of Federal Contract Compliance Programs office or from Federal procurement contracting officers. The Contractor is expected to make substantially uniform progress in meeting its goals in each craft during the period specified.

5. Neither the provisions of any collective bargaining agreement, nor the failure by a union with whom the Contractor has a collective bargaining agreement, to refer either minorities or women shall excuse the Contractor's obligations under these specifications, Executive Order 11246 as amended, or the regulations promulgated pursuant thereto.

6. In order for the nonworking training hours of apprentices and trainees to be counted in meeting the goals, such apprentices and trainees must be employed by the Contractor during the training period, and the Contractor must have made a commitment to employ the apprentices and trainees at the completion of their training, subject to the availability of employment opportunities. Trainees must be trained pursuant to training programs approved by the U.S. Department of Labor.

7. The Contractor shall take specific affirmative actions to ensure equal employment opportunity. The evaluation of the Contractor's compliance with these specifications shall be based upon its effort to achieve maximum results from its actions. The Contractor shall document these efforts fully, and shall implement affirmative action steps at least as extensive as the following:

a. Ensure and maintain a working environment free of harassment, intimidation, and coercion at all sites, and in all facilities at which the Contractor's employees are assigned to work. The Contractor, where possible, will assign two or more women to each Construction project. The Contractor shall specifically ensure that all foremen, superintendents, and other on-site supervisory personnel are aware of and carry out the Contractor's obligation to maintain such a working environment, with specific attention to minority or female individuals working at such sites or in such facilities.

b. Establish and maintain a current list of minority and female recruitment sources, provide written notification to minority and female recruitment sources and to community organizations when the Contractor or its unions have employment opportunities available, and maintain a record of the organization's responses.

c. Maintain a current file of the names, addresses and telephone numbers of each minority and female off-the-street applicant and minority or female referral from a union, a recruitment source or community organization and of what action was taken with respect to each such individual. If such individual was sent to the union hiring hall for referral and was not referred back to the Contractor by the union or, if referred, not employed by the Contractor, this shall be documented in the file with the reason therefor, along with whatever additional actions the Contractor may have taken.

d. Provide immediate written notification to the Director when the union or unions with which the Contractor has a collective bargaining agreement has not referred to the Contractor a minority person or woman sent by the Contractor, or when the Contractor has other information that the union referral process has impeded the Contractor's efforts to meet its obligations.

e. Develop on-the-job training opportunities and/or participate in training programs for the area which expressly include minorities and women, including upgrading programs and apprenticeship and trainee programs relevant to the Contractor's employment needs, especially those programs funded or approved by the Department of Labor. The Contractor shall provide notice of these programs to the sources compiled under 7b above.

f. Disseminate the Contractor's EEO policy by providing notice of the policy to unions and training programs and requesting their cooperation in assisting the Contractor in meeting its EEO obligations; by including it in any policy manual and collective bargaining agreement; by publicizing it in the company newspaper, annual report, etc.; by specific review of the policy with all management personnel and with all minority and female employees at least once a year; and by posting the company EEO policy on bulletin boards accessible to all employees at each location where Construction Work is performed.

g. Review, at least annually, the company's EEO policy and affirmative action obligations under these specifications with all employees having any responsibility

for hiring, assignment, layoff, termination or other employment decisions including specific review of these items with on-site supervisory personnel such as Superintendents, General Foremen, etc., prior to the initiation of Construction Work at any job site. A written record shall be made and maintained identifying the time and place of these meetings, persons attending, subject matter discussed, and disposition of the subject matter.

h. Disseminate the Contractor's EEO policy externally by including it in any advertising in the news media, specifically including minority and female news media, and providing written notification to and discussing the Contractor's EEO policy with other Contractors and subcontractors with whom the Contractor does or anticipates doing business.

i. Direct its recruitment efforts, both oral and written, to minority, female and community organizations, to schools with minority and female students and to minority and female recruitment and training organizations serving the Contractor's recruitment area and employment needs. Not later than one month prior to the date for the acceptance of applications for apprenticeship or other training by any recruitment source, the Contractor shall send written notification to organizations such as the above, describing the openings, screening procedures, and tests to be used in the selection process.

j. Encourage present minority and female employees to recruit other minority persons and women and, where reasonable, provide after school, summer and vacation employment to minority and female youth both on the site and in other areas of a Contractor's work force.

k. Validate all tests and other selection requirements where there is an obligation to do so under 41 CFR Part 60-3.

1. Conduct, at least annually, an inventory and evaluation at least of all minority and female personnel for promotional opportunities and encourage these employees to seek or to prepare for, through appropriate training, etc., such opportunities.

m. Ensure that seniority practices, job classifications, work assignments and other personnel practices, do not have a discriminatory effect by continually monitoring all personnel and employment related activities to ensure that the EEO policy and the Contractor's obligations under these specifications are being carried out.

n. Ensure that all facilities and company activities are non-segregated except that separate or single-user toilet and necessary changing facilities shall be provided to assure privacy between the sexes.

o. Document and maintain a record of all solicitations of offers for subcontracts from minority and female Construction contractors and suppliers, including circulation of solicitations to minority and female Contractor associations and other business associations.

p. Conduct a review, at least annually, of all supervisor's adherence to and performance under the Contractor's EEO policies and affirmative action obligations.

8. Contractors are encouraged to participate in voluntary associations which assist in fulfilling one or more of their affirmative action obligations (7a through p). The efforts of a Contractor association, joint Contractor-union, Contractor-community, or other similar group of which the Contractor is a member and participant, may be asserted as fulfilling any one or more of its obligations under 7a through p of these specifications provided that the Contractor actively participates in the group, makes every effort to assure that the group has a positive impact on the employment of minorities and women in the industry, ensures that the concrete benefits of the Program are reflected in the Contractor's minority and female work force participation, makes a good faith effort to meet its individual goals and timetables, and can provide access to documentation which demonstrates the effectiveness of actions taken on behalf of the Contractor. The obligation to comply, however, is the Contractor's noncompliance.

9. A single goal for minorities and a separate single goal for women have been established. The Contractor, however, is required to provide equal employment opportunity and to take affirmative action for all minority groups, both male and female, and all women, both minority and non-minority. Consequently, the Contractor may be in violation of the Executive Order if a particular group is employed in a substantially disparate manner (for example, even though the Contractor has achieved its goals for women generally, the Contractor may be in violation of the Executive Order if a particular of the Executive Order if a specific minority group of women is underutilized).

10. The Contractor shall not use the goals and timetables or affirmative action standards to discriminate against any person because of race, color, religion, sex, sexual orientation, gender identity, or national origin.

11. The Contractor shall not enter into any Subcontract with any person or firm debarred from Government contracts pursuant to Executive Order 11246 or suspended or is otherwise excluded from or ineligible for participation in federal assistance programs.

12. The Contractor shall carry out such sanctions and penalties for violation of these specifications and of the Equal Opportunity Clause, including suspension, termination and cancellation of existing subcontracts as may be imposed or ordered pursuant to Executive Order 11246, as amended, and its implementing regulations, by the Office of Federal Contract Compliance Programs. Any Contractor who fails to carry out such sanctions and penalties shall be in violation of these specifications and Executive Order 11246, as amended.

13. The Contractor, in fulfilling its obligations under these specifications, shall implement specific affirmative action steps, at least as extensive as those standards prescribed in paragraph 7 of these specifications, so as to achieve maximum results from its efforts to ensure equal employment opportunity. If the Contractor fails to comply with the requirements of the Executive Order, the implementing regulations, or these specifications, the Director shall proceed in accordance with 41 CFR 60-4.8.

14. The Contractor shall designate a responsible official to monitor all employment related activity to ensure that the company EEO policy is being carried out, to submit reports relating to the provisions hereof as may be required by the Government and to keep records. Records shall at least include for each employee the name, address, telephone numbers, Construction trade, union affiliation if any, employee identification number when assigned, social security number, race, sex, status (e.g., mechanic, apprentice trainee, helper, or laborer), dates of changes in status, hours worked per week in the indicated trade, rate of pay, and locations at which the work was performed. Records shall be maintained in an easily understandable and retrievable form; however, to the degree that existing records satisfy this requirement, Contractors shall not be required to maintain separate records.

15. Nothing herein provided shall be construed as a limitation upon the application of other laws which establish different standards of compliance or upon the application of requirements for hiring of local or other areas residents (e.g., those under the Public Works Employment Act of 1977 and the Community Development Block Grant Program).

(3) <u>Equal Opportunity Clause</u> (for contracts for Construction Work) required by 41 CFR § 60-1.4(b).

During the performance of this contract, the Contractor agrees as follows:

(1) The Contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, sexual orientation, gender identity, or national origin. The Contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, color, religion, sex, sexual orientation, gender identity, or national origin. Such action shall include, but not be limited to the following:

Employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided setting forth the provisions of this nondiscrimination clause.

(2) The Contractor will, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, sexual orientation, gender identity, or national origin.

(3) The Contractor will not discharge or in any other manner discriminate against any employee or applicant for employment because such employee or applicant has inquired about, discussed, or disclosed the compensation of the employee or applicant or another employee or applicant. This provision shall not apply to instances in which an employee who has access to the compensation information of other employees or applicants as a part of such employee's essential job functions discloses the compensation of such other employees or applicants to individuals who do not otherwise have access to such information, unless such disclosure is in response to a formal complaint or charge, in furtherance of an investigation, proceeding, hearing, or action, including an investigation conducted by the employer, or is consistent with the Contractor's legal duty to furnish information.

(4) The Contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding, a notice to be provided advising the said labor union or workers' representatives of the Contractor's commitments under this section, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

(5) The Contractor will comply with all provisions of Executive Order 11246 of September 24, 1965, and of the rules, regulations, and relevant orders of the Secretary of Labor.

(6) The Contractor will furnish all information and reports required by Executive Order 11246 of September 24, 1965, and by rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records, and accounts by

the administering agency and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

(7) In the event of the Contractor's noncompliance with the nondiscrimination clauses of this contract or with any of the said rules, regulations, or orders, this contract may be canceled, terminated, or suspended in whole or in part and the Contractor may be declared ineligible for further Government contracts or federally assisted construction contracts in accordance with procedures authorized in Executive Order 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order 11246 of September 24, 1965, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.

(8) The Contractor will include the portion of the sentence immediately preceding paragraph (1) and the provisions of paragraphs (1) through (8) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to section 204 of Executive Order 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The Contractor will take such action with respect to any subcontract or purchase order as the administering agency may direct as a means of enforcing such provisions, including sanctions for noncompliance:

Provided, however, that in the event a Contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the administering agency, the Contractor may request the United States to enter into such litigation to protect the interests of the United States.

E. Rights to Inventions. [Special Provisions For Contracts Involving Experimental, Developmental, or Research Work.]

- (1) If this Contract involves the performance of experimental, developmental, or research work by the Contractor or its subcontractors, and the entity performing such work is a Nonprofit Organization or Small Business Firm as defined below, the following provisions apply in addition to those set forth above in paragraphs (a), (b ad (c), unless the Contract specifically states that this provision is superseded:
 - a. Definitions. The following definitions apply to this section (D).
 - i. "Invention" means any invention or discovery which is or may be patentable or otherwise protectable under Title 35 of the United States Code, or any novel variety of plant which is or may be protected under the Plant Variety Protection Act (7 U.S.C. § 2321 *et seq.*).
 - ii. "Subject invention" means any invention of the Contractor conceived or first actually reduced to practice in the performance of work under this Contract, provided that in the case of a variety of plant, the date of determination (as defined in section 41(d) of the Plant Variety Protection Act, 7 U.S.C. 2401(d)) must also occur during the period of Contract performance.
 - iii. "Practical Application" means to manufacture in the case of a composition or product, to practice in the case of a

process or method, or to operate in the case of a machine or system; and, in each case, under such conditions as to establish that the invention is being utilized and that its benefits are, to the extent permitted by law or government regulations, available to the public on reasonable terms.

- iv. "Made" when used in relation to any invention means the conception or first actual reduction to practice of such invention.
- v. "Small Business Firm" means a small business concern as defined at section 2 of Pub. L. 85-536 (15 U.S.C. 632) and implementing regulations of the Administrator of the Small Business Administration. For the purpose of this clause, the size standards for small business concerns involved in government procurement and subcontracting at 13 CFR 121.3-8 and 13 CFR 121.3-12, respectively, will be used.
- vi. "Nonprofit Organization" means a university or other institution of higher education or an organization of the type described in section 501(c)(3) of the Internal Revenue Code of 1954 (26 U.S.C. 501(c) and exempt from taxation under section 501(a) of the Internal Revenue Code (25 U.S.C. 501(a)) or any nonprofit scientific or educational organization qualified under a state nonprofit organization statute.
- vii. "Statutory period" means the one-year period before the effective filing date of a claimed invention during which exceptions to prior art exist per 35 U.S.C. 102(b), as amended by the Leahy-Smith America Invents Act, Public Law 112-29.
- viii. The "contractor" means any person, small business firm or nonprofit organization, or as set forth in section 1, paragraph (b)(4) of Executive Order 12591, as amended, any business firm regardless of size, which is a party to a funding agreement.
- b. *Allocation of Principal Rights.* The Contractor may retain the entire right, title, and interest throughout the world to each subject invention subject to the provisions of this clause and 35 U.S.C. 203. With respect to any subject invention in which the Contractor retains title, the Federal government shall have a nonexclusive, nontransferable, irrevocable, paid-up license to practice or have practiced for or on behalf of the United States the subject invention throughout the world.

- c. Invention Disclosure ,Election of Title and Filing of Patent Application by Contractor.
 - i. The Contractor will disclose each subject invention to the City and the Federal Agency within two months after the inventor discloses it in writing to Contractor personnel responsible for patent matters. Such disclosure shall be in the form of a written report and shall identify the contract under which the invention was made and the inventor(s). It shall be sufficiently complete in technical detail to convey a clear understanding to the extent known at the time of the disclosure, of the nature, purpose, operation, and the physical, chemical, biological or electrical characteristics of the invention. The disclosure shall also identify any publication, on sale or public use of the invention and whether a manuscript describing the invention has been submitted for publication and, if so, whether it has been accepted for publication at the time of disclosure. In addition, after such disclosure, the Contractor will promptly notify the City and the Federal Agency of the acceptance of any manuscript describing the invention for publication or of any on sale or public use planned by the Contractor.
 - ii. The Contractor will elect in writing whether or not to retain title to any such invention by notifying the City and the Federal Agency within two years of disclosure to the City and the Federal Agency. However, in any case where a patent, a printed publication, public use, sale, or other availability to the public has initiated the one year statutory period wherein valid patent protection can still be obtained in the United States, the period for election of title may be shortened by the Federal Agency to a date that is no more than 60 days prior to the end of the statutory period.
 - iii. The Contractor will file its initial patent application on a subject invention to which it elects to retain title within one year after election of title or, if earlier, prior to the end of any statutory period wherein valid patent protection can be obtained in the United States after a publication, on sale, or public use. If the Contractor files a provisional application as its initial patent application, it shall file a non-provisional application within 10 months of the filing of the provisional application. The Contractor will file patent applications in additional countries or international patent offices within earlier ten months of the first filed patent application or six months date permission is granted by from the the Commissioner of Patents to file foreign patent - 20 -08/04/21 11:51 AM

applications where such filing has been prohibited by a Secrecy Order.

- iv. For any subject invention with Federal agency and contractor co-inventors, where the Federal agency employing such co-inventor determines that it would be in the interest of the government, pursuant to 35 U.S.C. 207(a)(3), to file an initial patent application on the subject invention, the Federal agency employing such co-inventor, at its discretion and in consultation with the contractor, may file such application at its own expense, provided that the contractor retains the ability to elect title pursuant to 35 U.S.C. 202(a).
- v. Requests for extension of the time for disclosure, election, and filing under paragraphs (i), (ii), and (iii) of this clause may, at the discretion of the Federal agency, be granted. When a contractor has requested an extension for filing a non-provisional application after filing a provisional application, a one-year extension will be granted unless the Federal agency notifies the contractor within 60 days of receiving the request.
- d. Conditions When the Government May Obtain Title

The Contractor will convey to the Federal Agency, upon written request, title to any subject invention --

- i. If the Contractor fails to disclose or elect title to the subject invention within the times specified in (c) of this clause, or elects not to retain title., .
- ii. In those countries in which the Contractor fails to file patent applications within the times specified in paragraph (c) of this clause; provided, however, that if the Contractor has filed a patent application in a country after the times specified in (c) of this clause, but prior to its receipt of the written request of the Federal Agency, the Contractor shall continue to retain title in that country.
- iii. In any country in which the Contractor decides not to continue the prosecution of any non-provisional patent application for, to pay a maintenance annuity or renewal fee on, or to defend in a reexamination or opposition proceeding on, a patent on a subject invention.
- e. Minimum Rights to Contractor and Protection of the Contractor Right to File

- i. The Contractor will retain a nonexclusive royalty-free license throughout the world in each subject invention to which the Government obtains title, except if the Contractor fails to disclose the invention within the times specified in (c), above. The Contractor's license extends to its domestic subsidiary and affiliates, if any, within the corporate structure of which the Contractor is a party and includes the right to grant sublicenses of the same scope to the extent the Contractor was legally obligated to do so at the time the Contract was awarded. The license is transferable only with the approval of the Federal Agency except when transferred to the successor of that party of the Contractor's business to which the invention pertains.
- ii. The Contractor's domestic license may be revoked or modified by the funding Federal Agency to the extent necessary to achieve expeditious practical application of the subject invention pursuant to an application for an exclusive license submitted in accordance with applicable provisions at 37 CFR Part 404 and agency licensing regulations (if any). This license will not be revoked in that field of use or the geographical areas in which the Contractor has achieved practical application and continues to make the benefits of the invention reasonably accessible to the public. The license in any foreign country may be revoked or modified at the discretion of the funding Federal Agency to the extent the Contractor, its licensees, or the domestic subsidiaries or affiliates have failed to achieve practical application in that foreign country.
- iii. Before revocation or modification of the license, the funding Federal Agency will furnish the Contractor a written notice of its intention to revoke or modify the license, and the Contractor will be allowed thirty days (or such other time as may be authorized by the funding Federal Agency for good cause shown by the Contractor) after the notice to show cause why the license should not be revoked or modified. The Contractor has the right to appeal, in accordance with applicable regulations in 37 CFR Part 404 and Federal Agency regulations (if any) concerning the licensing of Government-owned inventions, any decision concerning the revocation or modification of the license.
- Contractor Action to Protect the Government's Interest f.
 - i. The Contractor agrees to execute or to have executed and promptly deliver to the Federal Agency all instruments necessary to (i) establish or confirm the - 22 -08/04/21 11:51 AM

rights the Government has throughout the world in those subject inventions to which the Contractor elects to retain title, and (ii) convey title to the Federal Agency when requested under paragraph (d) above and to enable the Government to obtain patent protection throughout the world in that subject invention.

- ii. The Contractor agrees to require, by written agreement, its employees, other than clerical and nontechnical employees, to disclose promptly in writing to personnel identified as responsible for the administration of patent matters and in a format suggested by the Contractor each subject invention made under contract in order that the Contractor can comply with the disclosure provisions of paragraph (c), of this clause, to assign to the Contractor the entire right, title and interest in and to each subject invention made under Contract, and to execute all papers necessary to file patent applications on subject inventions and to establish the Government's rights in the subject inventions. This disclosure format should require, as a minimum, the information required by paragraph (c)(1) of this clause. The Contractor shall instruct such employees through employee agreements or other suitable educational programs on the importance of reporting inventions in sufficient time to permit the filing of patent applications prior to U.S. or foreign statutory bars.
- iii. For each subject invention, the contractor will, no less than 60 days prior to the expiration of the statutory deadline, notify the Federal agency of any decision: Not to continue the prosecution of a non-provisional patent application; not to pay a maintenance, annuity or renewal fee; not to defend in a reexamination or opposition proceeding on a patent, in any country; to request, be a party to, or take action in a trial proceeding before the Patent Trial and Appeals Board of the U.S. Patent and Trademark Office, including but not limited to post-grant review, review of a business method patent, inter partes review, and derivation proceeding; or to request, be a party to, or take action in a non-trial submission of art or information at the U.S. Patent and Trademark Office, including but not limited to a preissuance submission, a post-issuance submission, and supplemental examination ...
- iv. The Contractor agrees to include, within the specification of any United States patent applications and any patent issuing thereon covering a subject invention, the following statement, "This invention was made with government support under (identify the - 23 -08/04/21 11:51 AM

contract) awarded by (identify the Federal Agency). The government has certain rights in the invention."

- g. Subcontracts
 - i. The Contractor will include this clause, suitably modified to identify the parties, in all subcontracts, regardless of tier, for experimental, developmental or research work to be performed by a subcontractor. The subcontractor will retain all rights provided for the Contractor in this clause, and the Contractor will not, as part of the consideration for awarding the subcontract, obtain rights in the subcontractor's subject inventions.
 - ii. The Contractor will include in all other subcontracts, regardless of tier, for experimental developmental or research work the patent rights clause required by 2 CFR § 200.315(c) and Appendix II to 2 CFR Part 200.
 - iii. In the case of subcontracts, at any tier, when the prime award with the Federal Agency was a contract (but not a grant or cooperative agreement), the Agency, subcontractor, and the Contractor agree that the mutual obligations of the parties created by this clause constitute a contract between the subcontractor and the Federal Agency with respect to the matters covered by the clause; provided, however, that nothing in this paragraph is intended to confer any jurisdiction under the Contract Disputes Act in connection with proceedings under paragraph (j) of this clause.
- h. *Reporting on Utilization of Subject Inventions.* The Contractor agrees to submit on request periodic reports no more frequently than annually on the utilization of a subject invention or on efforts at obtaining such utilization that are being made by the Contractor or its licensees or assignees. Such reports shall include information regarding the status of development, date of first commercial sale or use, gross royalties received by the Contractor, and such other data and information as the Federal Agency may reasonably specify. The Contractor also agrees to provide additional reports as may be requested by the Federal Agency in connection with any march-in proceeding undertaken by the Federal Agency in accordance with paragraph (j) of this clause. As required by 35 U.S.C. § 202(c)(5), the Federal Agency agrees it will not disclose such information to persons outside the Government without permission of the Contractor.
- *i.* Preference for United States Industry. Notwithstanding any other provision of this clause, the Contractor agrees that neither it nor any assignee will grant to any person the exclusive right to use or sell any subject inventions in the United States unless such

person agrees that any products embodying the subject invention or produced through the use of the subject invention will be manufactured substantially in the United States. However, in individual cases, the requirement for such an agreement may be waived by the Federal Agency upon a showing by the Contractor or its assignee that reasonable but unsuccessful efforts have been made to grant licenses on similar terms to potential licensees that would be likely to manufacture substantially in the United States or that under the circumstances domestic manufacture is not commercially feasible.

- j. March-in Rights. The Contractor agrees that with respect to any subject invention in which it has acquired title, the Federal Agency has the right in accordance with the procedures in 37 CFR § 401.6 and any supplemental regulations of the Federal Agency to require the Contractor, an assignee or exclusive licensee of a subject invention to grant a nonexclusive, partially exclusive, or exclusive license in any field of use to a responsible applicant or applicants, upon terms that are reasonable under the circumstances, and if the Contractor, assignee, or exclusive licensee refuses such a request the Federal Agency has the right to grant such a license itself if the Federal Agency determines that:
 - i. Such action is necessary because the Contractor or assignee has not taken, or is not expected to take within a reasonable time, effective steps to achieve practical application of the subject invention in such field of use.
 - ii. Such action is necessary to alleviate health or safety needs which are not reasonably satisfied by the Contractor, assignee or their licensees;
 - iii. Such action is necessary to meet requirements for public use specified by Federal regulations and such requirements are not reasonably satisfied by the Contractor, assignee or licensees; or
 - iv. Such action is necessary because the agreement required by paragraph (i) of this clause has not been obtained or waived or because a licensee of the exclusive right to use or sell any subject invention in the United States is in breach of such agreement.
- k. Special Provisions for Contracts with Nonprofit Organizations. If the Contractor is a nonprofit organization, it agrees that:
 - i. Rights to a subject invention in the United States may not be assigned without the approval of the Federal Agency, except where such assignment is made to an organization which has as one of its primary functions - 25 -08/04/21 11:51 AM

the management of inventions, provided that such assignee will be subject to the same provisions as the Contractor;

- ii. The Contractor will share royalties collected on a subject invention with the inventor, including Federal employee co-inventors (when the Federal Agency deems it appropriate) when the subject invention is assigned in accordance with 35 U.S.C. § 202(e) and 37 CFR § 401.10;
- iii. The balance of any royalties or income earned by the Contractor with respect to subject inventions, after payment of expenses (including payments to inventors) incidental to the administration of subject inventions, will be utilized for the support of scientific research or education; and
- iv. It will make efforts that are reasonable under the circumstances to attract licensees of subject invention that are Small Business Firms and that it will give a preference to a Small Business Firm when licensing a subject invention if the Contractor determines that the Small Business Firm has a plan or proposal for marketing the invention which, if executed, is equally as likely to bring the invention to practical application as any plans or proposals from applicants that are not Small Business Firms; provided, that the Contractor is also satisfied that the Small Business Firm has the capability and resources to carry out its plan or proposal. The decision whether to give a preference in any specific case will be at the discretion of the Contractor. However, the Contractor agrees that the Federal Aency may review the Contractor's licensing program and decisions regarding Small Business applicants, and the Contractor will negotiate changes to its licensing policies, procedures, or practices with the Federal Agency when the Federal Agency's review discloses that the Contractor could take reasonable steps to implement more effectively the requirements of this paragraph (k)(iv). In accordance with 37 CFR 401.7, the Federal agency or the contractor may request that the Secretary review the contractor's licensing program and decisions regarding small business applicants.
- 1. *Communication.* The central point of contact at the Federal Agency for communications on matters relating to this clause may be obtained from the City upon request.

FEDERAL EXHIBIT 1

C 1

NOTICE TO BIDDERS

NOTICE OF REQUIREMENT FOR AFFIRMATIVE ACTION TO ENSURE EQUAL EMPLOYMENT OPPORTUNITY (EXECUTIVE ORDER 11246, as amended) FOR ALL CONSTRUCTION CONTRACTS AND SUB-CONTRACTS IN EXCESS OF \$10,000.

1. The Offeror's or Bidder's attention is called to the "Equal Opportunity Clause" and the "Standard Federal Equal Employment Opportunity Construction Contract Specifications" set forth herein.

2. The goals and timetables for minority and female participation, expressed in percentage terms for the Contractor's aggregate workforce in each trade on all Construction Work in the covered area, are as follows:

Goals and Timetables for Minorities

		<u>Goal</u>	
Trade	<u>(</u>	perce	<u>nt)</u>
Electricians	9.0	to	10.2
Carpenters	27.6	to	32.0
Steamfitters	12.2	to	13.5
Metal Lathers	24.6	to	25.6
Painters	28.6	to	26.0
Operating Engineers	25.6	to	26.0
Plumbers	12.0	to	14.5
Iron Workers (structural)	25.9	to	32.0
Elevator Constructors	5.5	to	6.5
Bricklayers	13.4	to	15.5
Asbestos Workers	22.8	to	28.0
Roofers	6.3	to	7.5
Iron Workers (ornamental)	22.4	to	23.0
Cement Masons	23.0	to	27.0
Glazers	16.0	to	20.0
Plasterers	15.8	to	18.0
Teamsters	. 22.0	to	22.5
Boilermakers	13.0	to	15.5
All Other	16.4	to	17.5

Goals and Timetables for Women

These goals are applicable to all the Contractor's Construction Work (whether or not it is Federal or federally assisted) performed in the covered area. If the Contractor performs Construction Work in a geographical area located outside of the covered area, it shall apply the goals established for such geographical area where the work is actually performed. With regard to this second area, the Contractor also is subject to the goals for both its federally involved and nonfederally involved Construction.

The Contractor's compliance with the Executive Order and the regulations in 41 CFR Part 60-4 shall be based on its implementation of the Equal Opportunity Clause, specific affirmative action obligations required by the specifications set forth in 41 CFR 60-4.3(a), and its efforts to meet the goals. The hours of minority and female employment and training must be substantially uniform throughout the length of the contract, and in each trade, and the Contractor shall made a good faith effort to employ minorities and women evenly on each of its projects. The transfer of minority or female employees or trainees from Contractor to Contractor or from project to project for the sole purpose of meeting the Contractor's goals shall be a violation of the contract, the Executive Order and the regulations in 41 CFR Part 60-4. Compliance with the goals will be measured against the total work hours performed.

3. The Contractor shall provide written notification to the Director of the Office of Federal Contract Compliance Programs within 10 working days of award of any Construction subcontract in excess of \$10,000 at any tier for Construction Work under the contract resulting from this solicitation. The notification shall list the name, address and telephone number of the subcontractor; employer identification number of the subcontract; estimated dollar amount of the subcontract; estimated starting and completion dates of the subcontract; and the geographical area in which the contract is to be performed.

4. As used in this Contract, the "covered area" is the City of New York.

EXHIBIT 2 Federal Labor Standards Provisions (<u>Non-Davis Bacon</u>)¹ Federal Emergency Management Agency (10/27/2015)

Applicability: The Project or Program to which the construction work covered by this contract pertains is being assisted by the United States of America and the following Federal Labor Standards Provisions are included in this Contract pursuant to the provisions applicable to such Federal assistance.

A. Compliance with the Copeland "Anti-Kickback" Act.

- 1. **Contractor.** The contractor shall comply with 18 U.S.C. § 874, 40 U.S.C. § 3145, and the requirements of 29 C.F.R. pt. 3 as may be applicable, which are incorporated by reference into this contract.
- 2. **Subcontracts.** The contractor or subcontractor shall insert in any subcontracts the clause in paragraph 1 above and such other clauses as the FEMA may by appropriate instructions require, and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all of these contract clauses.
- 3. **Breach.** A breach of the contract clauses above may be grounds for termination of the contract, and for debarment as a contractor and subcontractor as provided in 29 C.F.R. § 5.12.
- B. <u>Compliance with the Contract Work Hours and Safety Standards Act</u>. The provisions of this Section B are applicable where the amount of the prime contract exceeds \$100,000.
 - 1. **Overtime requirements.** No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-halftimes the basic rate of pay for all hours worked in excess of forty hours in such workweek.
 - 2. Violation; liability for unpaid wages; liquidated damages. In the event of any violation of the clause set forth in paragraph (1) of this Section B the contractor and any subcontractor responsible therefor shall be liable for the unpaid wages. In

¹ This version of Exhibit 2 applies to contracts funded by FEMA Grant and Cooperative Agreement Programs, including the Public Assistance Program. Do not use this version of Exhibit 2 in connection with FEMA programs that are subject to the Davis-Bacon Act; such programs are the Emergency Management Preparedness Grant Program, the Homeland Security Grant Program, Nonprofit Security Grant Program, Tribal Homeland Security Grant Program, and Transit Security Grant Program.

addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in paragraph (1) of this section, in the sum of \$10 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph (1) of this section.

- 3. Withholding for unpaid wages and liquidated damages. The City of New York shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any moneys payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated §damages as provided in the clause set forth in paragraph (2) of this section.
- 4. **Subcontracts.** The contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraphs (1) through (4) of this Section B and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs (1) through (4) of this section B.
- C. <u>Health and Safety</u>. The provisions of this paragraph C are applicable where the amount of the prime contract exceeds \$100,000.
 - 1. No laborer or mechanic shall be required to work in surroundings or under working conditions which are unsanitary, hazardous, or dangerous to his health and safety as determined under construction safety and health standards promulgated by the Secretary of Labor by regulation.
 - 2. The Contractor shall comply with all regulations issued by the Secretary of Labor pursuant to Title 29 Part 1926 and failure to comply may result in imposition of sanctions pursuant to the Contract Work Hours and Safety Standards Act, (Public Law 91-54, 83 Stat 96). 40 USC 3701 et seq.
 - 3. The contractor shall include the provisions of this paragraph in every subcontract so that such provisions will be binding on each subcontractor. The contractor shall take such action with respect to any subcontractor as FEMA or the Secretary of Labor shall direct as a means of enforcing such provisions.

FEDERAL EMERGENCY MANAGEMENT AGENCY ("FEMA") RIDER (1/20/2021)

For use with contracts funded by the FEMA Grant and Cooperative Agreement Programs, including the Public Assistance Program

(This Rider should not be used with contracts funded by the following FEMA Programs: Emergency Management Preparedness Grant Program, Homeland Security Grant Program, Nonprofit Security Grant Program, Tribal Homeland Security Grant Program, Port Security Grant Program, and Transit Security Grant Program. This Rider should be accompanied by the Uniform Federal Contract Provisions Rider for Federally Funded Procurement Contracts.)

- 1. <u>Suspension and Debarment</u>. Section C(5) of the Uniform Federal Contract Provisions Rider for Federally Funded Procurement Contracts is supplemented with the following provisions:
 - (a) This contract is a covered transaction for purposes of 2 C.F.R. Parts 180 and 3000. As such, the Contractor is required to verify that none of the Contractor, its principals (defined at 2 C.F.R. § 180.995), or its affiliates (defined at 2 C.F.R. § 180.905) are excluded (defined at 2 C.F.R. § 180.940) or disqualified (defined at 2 C.F.R. § 180.935). By entering into this contract, the Contractor certifies that it is in compliance with 2 C.F.R. Parts 180 and 3000.
 - (b) The Contractor must comply with 2 C.F.R. Part 180, subpart C and 2 C.F.R. Part 3000, subpart C during the term of this contract and must include a requirement to comply with these regulations in any lower tier covered transaction it enters into.
 - (c) The certification in paragraph (a), above, and section C(5) of the Uniform Federal Contract Provisions Rider for Federally Funded Procurement Contracts is a material representation of fact relied upon by the City of New York. If it is later determined that the Contractor did not comply with 2 C.F.R. Part 180, subpart C and 2 C.F.R. Part 3000, subpart C, in addition to remedies available to the City of New York and, if applicable, the State of New York, the Federal Government may pursue available remedies, including but not limited to suspension and/or debarment.
- 2. <u>Davis-Bacon Act</u>. For the purposes of Section D(1)(a) of the Uniform Federal Contract Provisions Rider, compliance with the Davis-Bacon Act (40 U.S.C. §§ 3141-3148) is not required of the Contractor pursuant to FEMA regulations. However, if this Contract is funded by another federal funding source (e.g., the U.S. Department of Housing and Urban Development CDBG or CDBG-DR programs), compliance with the Davis-Bacon Act is required to the extent required by law and as set forth in the contract documents.
- 3. <u>Rights to Inventions Made Under a Contract or Agreement</u>. Section E of the Uniform Federal Contract Provisions Rider for Federally Funded Procurement Contracts does not apply to the following FEMA Programs: Public Assistance Program, Hazard Mitigation Grant Program, Fire Management Assistance Grant Program, Crisis Counseling Assistance and Training Grant Program, Disaster Case Management Program, and Federal Assistance to Individuals and Households – Other Needs Assistance Grant Program.

- 4. <u>Copeland "Anti-Kickback" Act</u>. The Contractor shall comply with provisions of the Copeland "Anti-Kickback" Act (18 U.S.C. § 874) as delineated in the Uniform Federal Contract Provisions Rider, FEMA Exhibit 2, Section (A).
- 5. <u>Contract Work Hours and Safety Standards Act</u>. The Contractor shall comply with the provisions of the Contract Work Hours and Safety Standards Act as delineated in the Uniform Federal Contract Provisions Rider, FEMA Exhibit 2, Section (B).
- 6. Access to Records.
 - (a) The Contractor agrees to provide the City of New York, the FEMA Administrator, the Comptroller General of the United States, or any of their authorized representatives access to any books, documents, papers, and records of the Contractor which are directly pertinent to this contract for the purposes of making audits, examinations, excerpts, and transcriptions.
 - (b) The Contractor agrees to permit any of the foregoing parties to reproduce said documents by any means or to copy excerpts and transcriptions as reasonably needed.
 - (c) The Contractor agrees to provide the FEMA Administrator or his/her authorized representative access to construction or other work sites pertaining to the work being completed under the contract.
 - (d) In compliance with the Disaster Recovery Act of 2018, the City of New York and the Contractor acknowledge and agree that no language in this contract is intended to prohibit audits or internal reviews by the FEMA Administrator or the Comptroller General of the United States.
- 7. <u>Logos</u>. The Contractor shall not use DHS seal(s), logos, crests, or reproductions of flags or likenesses of DHS agency officials without specific FEMA pre-approval.
- 8. <u>Compliance with Law</u>. The Contractor acknowledges that FEMA financial assistance will be used to fund all or a portion of the contract. The Contractor will comply with all applicable federal law, regulations, executive orders, FEMA policies, procedures, and directives.
- 9. <u>Federal Government not a Party</u>. The Contractor acknowledges and understands that the Federal Government is not a party to this contract and is not subject to any obligations or liabilities to the City, Contractor or any other party pertaining to any matter resulting from the contract.
- 10. <u>False Claims</u>. The Contractor acknowledges that 31 U.S.C. Chap. 38 applies to the Contractor's actions pertaining to this contract.



Brooklyn Navy Yard Development Corporation BrooklynNavyYard.org

Building 77 141 Flushing Ave, Suite 801 Brooklyn, NY 11205

EXHIBIT M PROJECT DRAWINGS & SPECIFICATIONS

[to attach]

LOCATION MAP

BROOKLYN NAVY YARD **RESTORATION OF BUILDING 275 INDOOR SUBSTATION**

63 FLUSHING AVENUE, #300 **BROOKLYN, NY 11205**

BNYD 1901/1901A FINAL BID DOCUMENT **JANUARY 31, 2025**



PROJECT LOCATION

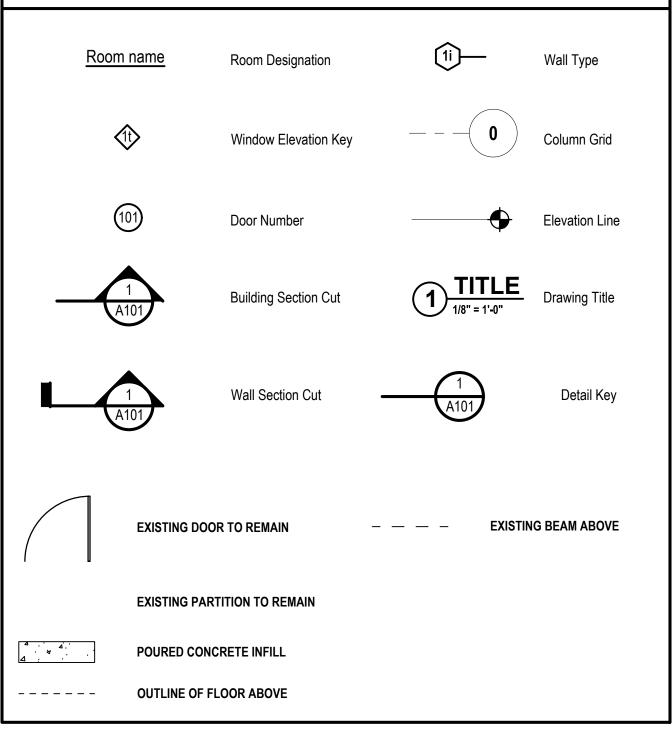
	H 2	architects + engineer
DRAWING LIST	M	
INFORMATIONAL DRAWINGS		
G-000.00 COVER SHEET G-100.00 GENERAL NOTES		
ARCHITECTURAL DRAWINGS	538 Broad Hollow Road	Melville, NY 11747 Albany, NY 12205
A-100.00 EXISTING CONDITIONS & PROPOSED FLOOR PLANS A-200.00 BUILDING SECTION	4th Floor East Melville, NY 11747 P:(631)756-8000	White Plains, NY 10601 New City, NY 10956
STRUCTURAL DRAWINGS	F:(631)694-4122	Parsippany, NJ 07054
00 GENERAL NOTES 00 ELECTRICAL PLATFORM CONDITIONS		Howell, NJ 07731
-100.00 ELECTRICAL PLATFORM FRAMING PLAN -101.00 CONDUIT SUPPORT DETAILS		
102.00 CONCRETE REPAIR DETAILS		
ECHANICAL DRAWINGS I-100.00 ENERGY ANALYSIS AND SPECIAL INSPECTIONS		3
-001.00 HVAC LEGENDS, SYMBOLS, ABBREVIATIONS, AND GENERAL NOTES -100.00 HVAC FLOOR PLAN, SCHEDULES, AND DETAILS		
0.00 ELECTRICAL LEGENDS		
0.00 ELECTRICAL DEMOLITION PLAN 0.00 ELECTRICAL POWER PLAN		
300.00 ELECTRICAL LIGHTING PLAN 400.00 ELECTRICAL SINGLE LINE DIAGRAM		
-500.00 SWITCHGEAR ELEVATION AND PLAN VIEW -600.00 ELECTRICAL PANEL SCHEDULES		
-000.00 ELECTRICAL PANEL SCHEDOLES		
ENVIRONMENTAL DRAWING		Novy Voya
-101.00 ENVIRONMENTAL HAZARDOUS MATERIALS DRAWING	Brooklyn I	-
	Development	Corporation
		-
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	Restoration of	-
	Indoor Su	INSTALION
	63 FLUSHING AVI	
	BROOKLYN	•
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GENERAL NOTES

- 1. THE DRAWING AND SPECIFICATION ARE COMPLEMENTARY. THE BOUND PROJECT SPECIFICATION CONTAINS THE CONDITIONS OF THE CONTRACT, PROCEDURES AND TECHNICAL SPECIFICATIONS.
- 2. THE CONTRACTOR WILL CHECK AND VERIFY ALL CONDITIONS AT THE SITE BEFORE STARTING OF WORK AND THEY WILL FAMILIARIZE THEMSELVES WITH THE INTENT OF THESE PLANS AND MAKE SURE WORK AGREES WITH SAME. IF DURING CONSTRUCTION, A CONDITION EXISTS WHICH DISAGREES WITH THAT INDICATED ON THE PLANS, THE CONTRACTOR WILL STOP WORK AND NOTIFY ARCHITECT. SHOULD THEY FAIL TO FOLLOW THIS PROCEDURE AND CONTINUE WITH WORK, THEY WILL ASSUME ALL RESPONSIBILITY AND LIABILITY ARISING FROM THEIR ACTIONS.
- 3. THE CONTRACTOR SHALL OBTAIN ANY AND ALL PERMITS REQUIRED FOR THE PERFORMANCE OF THE WORK AND THE OWNER SHALL PAY ALL FEES IN CONNECTION WITH THEREOF UNLESS OTHERWISE AGREED UPON.
- 4. THE DESIGN, PREPARATIONS OF NECESSARY CONSTRUCTION DOCUMENTS AND THE SECURING OF ALL REQUIRED PERMITS AND APPROVALS FROM THE APPROPRIATE ADMINISTRATIVE AUTHORITY SHALL BE COMPLETED PRIOR TO THE COMMENCEMENT OF THE WORK AND SHALL INCLUDE ALL WORK.
- 5. DO NOT SCALE DRAWINGS. WRITTEN DIMENSIONS CONFIRMED BY FIELD VERIFIED CONDITIONS TAKE PRECEDENCE. IF A DISCREPANCY ARISES BASED ON FIELD VERIFIED CONDITIONS, CONSULT WITH ARCHITECT BEFORE PROCEEDING WITH WORK OR ORDERING MATERIALS.
- 6. THE CONTRACTOR SHALL NOT MAKE DEVIATIONS FROM THE DESIGN DRAWINGS WITHOUT WRITTEN DIRECTIONS FROM THE ARCHITECT. REPORT ANY ERRORS, INACCURACIES, MISSING DIMENSIONAL REQUIREMENTS OR CONFLICTS TO THE ARCHITECT/ENGINEER IN WRITING BEFORE BEGINNING ANY WORK.
- 7. IF THERE IS A DISCREPANCY ON THE CONSTRUCTION DOCUMENTS. THE ARCHITECT SHALL BE NOTIFIED IMMEDIATELY SO THAT THE DISCREPANCIES CAN BE RESOLVED. UNLESS OTHERWISE INDICATED IN WRITING BY ARCHITECT, THE MORE CONSERVATIVE INTERPRETATION OF THE CONSTRUCTION DOCUMENTS SHALL APPLY.
- 8. VERIFY EXACT LAYOUT COMPATIBILITY WITH ALL EXISTING CONDITIONS AND COORDINATE ALL WORK TO BE UNDERTAKEN PRIOR TO BEGINNING ANY WORK. NOTIFY THE ARCHITECT IN WRITING BEFORE BEGINNING WORK IF ANY DISCREPANCIES ARE FOUND WITH CONDITIONS ENCOUNTERED. CONTRACTOR WILL BE RESPONSIBLE FOR ALL TEMPORARY MEASURES, TIME LOST, CHANGES TO THE WORK SCOPE WITH ANY ADDITIONAL COMPENSATION IF CONTRACTOR FAILS TO PROVIDE AFOREMENTIONED VERIFICATIONS, NOTIFICATIONS AND COORDINATION PRIOR TO COMMENCING WORK.
- 9. ALL PENETRATIONS REQUIRED TO ACCOMMODATE ALL WORK DETAILED OR SPECIFIED FOR THEIR SCOPE SHALL BE LOCATED SIZED, MADE & VERIFIED BY THE CONTRACTOR.
- 10. DISTURB ONLY THE AREAS OF THE SITE AFFECTED BY NEW CONSTRUCTION, UNLESS NOTED OTHERWISE. CONTRACTOR SHALL PROTECT ALL ADJACENT EXISTING CONSTRUCTION, ITEMS, FINISHES, ETC. AND SHALL PATCH, REPAIR AND/OR REPLACE, AND REFINISH AS REQUIRED TO RESTORE ANY AND ALL AREAS DAMAGED DURING CONSTRUCTION.
- 11. PROTECT ADJOINING PROPERTIES WHEN CONDUCTING WORK.
- 12. ALL WORK SHALL BE PERFORMED IN STRICT ACCORDANCE WITH THE APPLICABLE CODES AND WITH THE RULES AND REGULATIONS OF ALL LOCAL AGENCIES, DEPARTMENTS OR LAWS HAVING JURISDICTION OVER ANY PORTION OR SPECIFIC PHASE OF THE WORK. THE CONTRACTOR SHALL COORDINATE THE WORK WITH PUBLIC UTILITY COMPANIES HAVING JURISDICTION.
- 13. ALL WORK WILL BE IN ACCORDANCE WITH THE IBC OF NEW YORK STATE, INTERNATIONAL FIRE CODE, INTERNATIONAL PLUMBING CODE, INTERNATIONAL MECHANICAL CODE, THE INTERNATIONAL ENERGY CONSERVATION CONSTRUCTION CODE AND ALL LOCAL AND STATE ZONING AND BUILDING CODES AND ORDINANCES HAVING JURISDICTION.
- 14. CONTRACTOR SHALL STRICTLY ADHERE TO MANUFACTURERS PRINTED INSTRUCTIONS AND WILL GUARANTEE TO THE OWNER THAT ALL MATERIALS AND EQUIPMENT INCORPORATED IN THE WORK WILL BE NEW UNLESS OTHERWISE SPECIFIED, AND THAT ALL WORK WILL BE OF GOOD QUALITY, FREE FROM DEFECTS AND FAULTS FOR A MINIMUM OF ONE (1) YEAR, UNLESS SPECIFIED OTHERWISE, STARTING FROM THE DATE OF SUBSTANTIAL COMPLETION AND ACCEPTANCE OF WORK.
- 15. CONFIRM ALL CHANGES TO WORK IN WRITING TO THE ARCHITECT AND OWNER AND RECEIVE APPROVAL OF ALL CHANGES IN WRITING BEFORE COMMENCING RELATED WORK.
- 16. DIMENSIONS NOTED AS "EQUAL" OR "EQ" WITHIN A ROOM REFER TO A DISTANCE RELATIONSHIP CONTAINED ONLY IN THAT ROOM AT AN OPPOSING OR PARALLEL WALL UNLESS NOTED OTHERWISE.

- 17. VERIFY AND ADJUST APPROXIMATE DIMENSIONS (+/-) IN THE FIELD. VERIFY WITH A/E PRIOR TO COMMENCING CONSTRUCTION.
- 18. ALL ITEMS DETAILED OR SPECIFIED TO RUN WITHIN OR ATTACHED TO WALLS AND CEILINGS SHALL BE CONCEALED OR RECESSED UNLESS NOTED OTHERWISE.
- 19. CONTRACTORS SHALL BE RESPONSIBLE FOR MAINTAINING WATER-TIGHT WEATHER PROTECTIONS THROUGHOUT ALL WORK AREA & EXISTING AREAS IMMEDIATELY ADJACENT TO THOSE WORK AREAS, FOR THE DURATION OF THE ENTIRE PROJECT.
- 20. ALL SECTIONS AND DETAILS SHALL BE CONSIDERED TYP. AND APPLY FOR THE SAME AND SIMILAR CONDITIONS, UNLESS OTHERWISE SPECIFICALLY NOTED.
- 21. ANY ITEM OF WORK NECESSARY FOR PROPER COMPLETION OF CONSTRUCTION, WHICH IS NOT SPECIFICALLY COVERED ON THE DRAWINGS SHALL BE CONSIDERED INCLUDED IN THIS WORK AND SHALL BE PERFORMED IN A MANNER DEEMED GOOD PRACTICE OF THE TRADE INVOLVED.
- 22. THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR THE SAFETY OF THE PUBLIC, WORKERS AND THE PROPERTY DURING CONSTRUCTION OPERATIONS THROUGHOUT AND UNTIL COMPLETION OF ALL WORK.
- 23. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE ACTS AND OMISSIONS OF ALL OF THE CONTRACTORS EMPLOYEES AND ALL SUBCONTRACTORS, THEIR AGENTS, EMPLOYEES AND ALL OTHER PERSONS PERFORMING ANY OF THE WORK UNDER THE CONTRACT WITH THE CONTRACTOR. THE CONTRACTOR SHALL BE FULLY INSURED WITH LIABILITY, DISABILITY AND WORKERS COMPENSATION INSURANCES.
- 24. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE ADEQUATELY BRACING AND PROTECTING ALL WORK DURING CONSTRUCTION AGAINST DAMAGE, BREAKAGE, COLLAPSE, DISTORTION AND MISALIGNMENT.
- 25. THE ARCHITECT SHALL NOT BE RESPONSIBLE FOR THE PERFORMANCE OR THE WORK OF THE GENERAL CONTRACTOR, OWNER OR ANY OTHER SUBCONTRACTORS NOR SHALL THE ARCHITECT GUARANTEE THEIR PERFORMANCE OR THEIR WORK.
- 26. CONTRACTOR SHALL NOTIFY ARCHITECT IMMEDIATELY IF THEY CANNOT COMPLY WITH ALL REQUIREMENTS OF THE CONTRACT DOCUMENTS (DRAWINGS AND SPECIFICATIONS), APPLICABLE CODES AND LOCAL REQUIREMENTS.
- 27. THE CONTRACTOR SHALL INDEMNIFY AND HOLD THE ARCHITECT AND THE ARCHITECTS AGENTS HARMLESS FROM AND AGAINST ALL LOSS, DAMAGE OR EXPENSE (INCLUDING REASONABLE ATTORNEY FEES) RESULTING FROM ANY CLAIM.
- 28. THE ARCHITECT SHALL NOT BE RESPONSIBLE FOR ANY CHANGES TO THIS PROJECT MADE BY OWNER, GENERAL CONTRACTOR OR ANY SUBCONTRACTOR OR MATERIAL SUPPLIER UNLESS PROPERLY AUTHORIZED, IN WRITING, BY THE ARCHITECT.
- 29. ALL DRAWINGS, SPECIFICATIONS, AND ANY COPIES SHALL REMAIN THE PROPERTY OF THE ARCHITECT. THEY ARE TO BE USED ONLY WITH RESPECT TO THE CONTRACTORS WORK ON THIS PROJECT AND SHALL NOT BE USED, IN ANY MANNER, ON ANY OTHER PROJECT.
- 30. THESE DOCUMENTS DO NOT INCLUDE THE NECESSARY COMPONENTS FOR CONSTRUCTION SAFETY. WORKER AND PUBLIC SAFETY, CARE OF ADJACENT PROPERTIES DURING CONSTRUCTION, AND COMPLIANCE WITH STATE AND FEDERAL REGULATIONS REGARDING SAFETY IS, AND SHALL REMAIN, THE CONTRACTORS RESPONSIBILITY.
- 31. THE CONTRACTOR SHALL TAKE PRECAUTIONARY MEASURES TO PROTECT THE PREMISES FROM DUST, DIRT OR DAMAGE, DURING AND UNTIL COMPLETION AND FINAL ACCEPTANCE OF THE PROJECT. ALL ITEMS REMOVED FROM THE PROJECT SITE DURING THE CONSTRUCTION SHALL REMAIN THE PROPERTY OF THE OWNER UNLESS NOTED OTHERWISE, WITH THE EXCEPTION OF DEBRIS THAT SHALL BE REMOVED FROM THE PROJECT SITE AND LEGALLY DISPOSED OF ON A DAILY BASIS.
- 32. THE CONTRACTOR IS RESPONSIBLE FOR THE COORDINATION OF ALL WORK INCLUDING SITE, MECHANICAL, ELECTRICAL AND PLUMBING TRADES.
- 33. ALL NAILING SHALL BE IN ACCORDANCE WITH THE APPLICABLE CODES, THE WOOD FRAMING CONSTRUCTION MANUAL, AS APPLICABLE, AND THE NATIONAL DESIGN STANDARD FOR WOOD CONSTRUCTION, LATEST EDITION.
- 34. DATUM ELEVATION AT FINISHED FIRST FLOOR IS MDE IS EL: +14.5' NAVD. ALL VERTICAL DIMENSIONS FOR THE FLOOR PLANS, ELEVATIONS, SECTIONS AND DETAILS ARE REFERENCED FROM THIS DATUM. SEE PLANS FOR DATUM RELATIONSHIP TO ACTUAL APPLICABLE NGVD (NATIONAL GEODETIC VERTICAL DATUM) ELEVATION. COORDINATE WITH ANY DRAWINGS REFERENCING NGVD ELEVATIONS ACCORDINGLY.

SYMBOL LEGEND



GENERAL CODE ANALYSIS

OCCUPANCY CLASSIFICATION: (2022 NYC BUILDING CODE CHAPTER 3)

CONSTRUCTION TYPE: (2022 NYC BUILDING CODE CHAPTER 6)

ALL WORK SHALL BE IN ACCORDANCE WITH, BUT NOT LIMITED TO, ALL APPLICABLE CODES: 2022NEW YORK CITY GENERAL ADMINISTRATIVE PROVISIONS FOR CONSTRUCTION CODES 2022 NEW YORK CITY BUILDING CODE (AND THE 1968 BUILDING CODE FOR ALTERATIONS) 2022 NEW YORK CITY FIRE CODE 2022 NEW YORK CITY PLUMBING CODE 2022 NEW YORK CITY PLUMBING CODE 2022 NEW YORK CITY MECHANICAL CODE 2022 NEW YORK CITY FUEL GAS CODE 2011 NEW YORK CITY ELECTRIC CODE 2020 NEW YORK CITY ELECTRIC CODE

F-1

TYPE IIB

ASHRAE 90.1-2016 (ENERGY STANDARD FOR BUILDINGS EXCEPT LOW-RISE RESIDENTIAL BUILDINGS) ICC/ANSI A117.1-2009 ACCESSIBLE AND USABLE BUILDINGS AND FACILITIES NFPA 101-2015 LIFE SAFETY CODE

ABBREVIATIONS

CORR

CORRIDOR

ADDR					
AB	ANCHOR BOLT	СРТ	CARPET	GALV	GALVANIZED
ABV	ABOVE	CR	CARD READER	GB	GRAB BAR
A/C	AIR CONDITIONER	CRS	CORROSION-RESISTANT STEEL	GEN	GENERAL
ACI	AMERICAN CONCRETE INSTITUTE	CRSI	CONCRETE REINFORCING STEEL INSTITUTE	GL	GLASS, GLAZED
ACST	ACOUSTIC	C/S	COUNTERSUNK	GR	GRADE
ACP	ACOUSTICAL CEILING PANEL	CT	CERAMIC TILE	GRT	GROUT
ACU	AIR CONDITIONING UNIT	CTG	COATING	GWB	GYPSUM WALL BOARD
AD	ACCESS DOOR	CTR	CENTER	GYP	GYPSUM
ADAPT	ADAPTATION	CU	COPPER	GYP.BD.	GYPSUM BOARD
ADH	ADHESIVE	CW	COLD WATER	HC	HANDICAPPED
ADJ	ADJUSTABLE	DBL	DOUBLE	HDBD	HARDBOARD
ADMIN	ADMINISTRATION	DET	DETAIL	HDWD	HARDWOOD
ADO	AUTOMATIC DOOR OPERATOR	DF		HDWE	HARDWARE
A/E	ARCHITECT/ENGINEER	DIA	DIAMETER	HM	HOLLOW METAL
AFF	ABOVE FINISH FLOOR	DIAG	DIAGONAL	HOR	HORIZONTAL
ALT	ALTERNATE	DIM	DIMENSION	HR	HANDRAIL
ALUM	ALUMINUM	DISP	DISPENSER	HT	HEIGHT
ANCH	ANCHOR	DN	DOWN	HTG	HEATING
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE	DRSG	DRESSING	HW	HOT WATER
AP	ACCESS PANEL	DINGO	DOWNSPOUT	INSUL	INSULATION/INSULATING
APPROX	APPROXIMATE	DRWG	DRAWING	INT	INTERIOR
ASPH	ASPHALT	DWR		JNT	JOINT
ASPPLK	ASPHALT PLANK	E	DRAWER ELECTRICAL	JST	JOINT
ASSIST	ASSISTANT	EA		KP	
ASSIST	AMERICAN SOCIETY FOR	EA		LAM	KICK PLATE
ASTIM		EL	EXPANSION JOINT		LAMINATE
лт	TESTING & MATERIALS ACOUSTICAL TILE			LAV	LAVATORY
AT		ELEC			LEADER
AWS	AMERICAN WELDING SOCIETY	ELEV	ELEVATION	LKR	
BAL		ENG		LLH	LONG LEG HORIZONTAL
BB	BULLETIN BOARD	EP	ELECTRICAL PANEL	LLV	LONG LEG VERTICAL
BC	BRICK COURSE	EPY	EPOXY COATING	LOC	LOCATION
BD	BOARD	EQ	EQUAL	LP	LOW POINT
BLDG	BUILDING	EQUIP	EQUIPMENT	LMSTN	LIMESTONE
BLK	BLOCK	E.S.	EACH SIDE	LT	LIGHT
BLKG	BLOCKING	EXAM	EXAMINATION	М	MECHANICAL
BM	BEAM	EXIST	EXISTING	MANUF	MANUFACTURER
B.O.	BOTTOM OF	EXST EXP	EXHAUST	MATL	MATERIAL
BOL	BOTTOM OF LINTEL		EXPOSED	MAX MDE	
BOT		EXPN	EXPANSION	MECH	MITIGATION DESIGN ELEVATION
BR	BUMPER RAIL BRACKET	EXT			
BRKT		FAI	FRESH AIR INTAKE	M.E.P.	MECHANICAL, ELECTRICAL, PLUMBING
BU CAB	BUILT-UP CABINET	F.C. F.B.O.		MET MFD	METAL MANUFACTURED
	CADINE I CATCH BASIN	F.B.U. FC	FURNISHED BY OTHERS	MFD	
CB CC	CONSTRUCTION CONTRACTOR	FCU		MGR	MANUFACTURER
CLG	CEILING	FD	FAN COIL UNIT	MID	MANAGER
CEM	CEMENT	FE		MIN	MIDDLE
CER	CERAMIC	FF	FIRE EXTINGUISHER FINISH FLOOR	MISC	MINIMUM MISCELLANEOUS
CFL	CONDUCTIVE FLOORING	FHC		MLDG	
CG	CORNER GUARD	FHMS	FIRE HOUSE CABINET	MEDG	MOLDING
	CAST-IN-PLACE	FIN	FLAT HEAD MACHINE SCREW	MO	
CIP CJ	CONTROL JOINT	FIN	FINISH	MOIST	MASONRY OPENING
CLG	CEILING	FLAM	FLAMMABLE	MPE	
CLGL	CLEAR GLASS	FLSHG	FLOOR	MR	MECHANICAL, PLUMBING, ELECTRICAL
			FLASHING		MOISTURE RESISTANT
CLO		FDN	FOUNDATION	MT	METAL THRESHOLD
CMU	CONCRETE MASONRY UNIT	FP	FIRE PARTITION	MTL	
CO		FR FSP		MTP MULT	
COL CONC	COLUMN CONCRETE	FSP FTG	FIRE STANDPIPE	NBS	
			FOOTING		NATIONAL BUREAU OF STANDARDS
CONST CONT	CONSTRUCTION CONTINUOUS	FXGL FUR'G	FIXED GLASS	NIC NL	
CONTR	CONTRACTOR		FURRING	NO	
		G	GAS		NUMBER

GA

GAUGE

SCOPE:

FLOOD DESIGN COMPLIANCE	
TO REMOVE AND REPLACE THE EXISTING ELECTRICAL EQUIPMENT IN THE CUI ELEVATION IN THE SAME ROOM.	RRENT

FLOOD DESIGN CLASS ACCORDING TO ASCE 24	2
FLOOD ZONE	AE (NON COSTA
BASE FLOOD ELEVATION (BFE)	11.0 NAVD
MITIGATION DESIGN ELEVATION (MDE)	14.5 (MDE = BFE
IN 'COASTAL A ZONE'	NO
AVERAGE ELEVATION	
SURROUNDING GRADE	9.6
FIRST FLOOR	9.9
EXISTING ELECTRICAL ROOM FLOOR	8.9

NTS

OHD

OPG

OPP

OW

OWSJ

PAR

PERP

PLAS

P.LAM

PLBG

PLYWD

PNT'D

PORT

PROJ

PS

PTD

PTN

PVC

PW

RRR

R&C

RCP

RD

RDL

REC

REF

RFG

REHAB

REPRO

REQ.

RM

RST

RT

SCHED SECT

SGFU

SIM

SJC

SJW

NRCA NATIONAL ROOFING CONTRACTORS ASSOC.

SPEC

S&R

RO

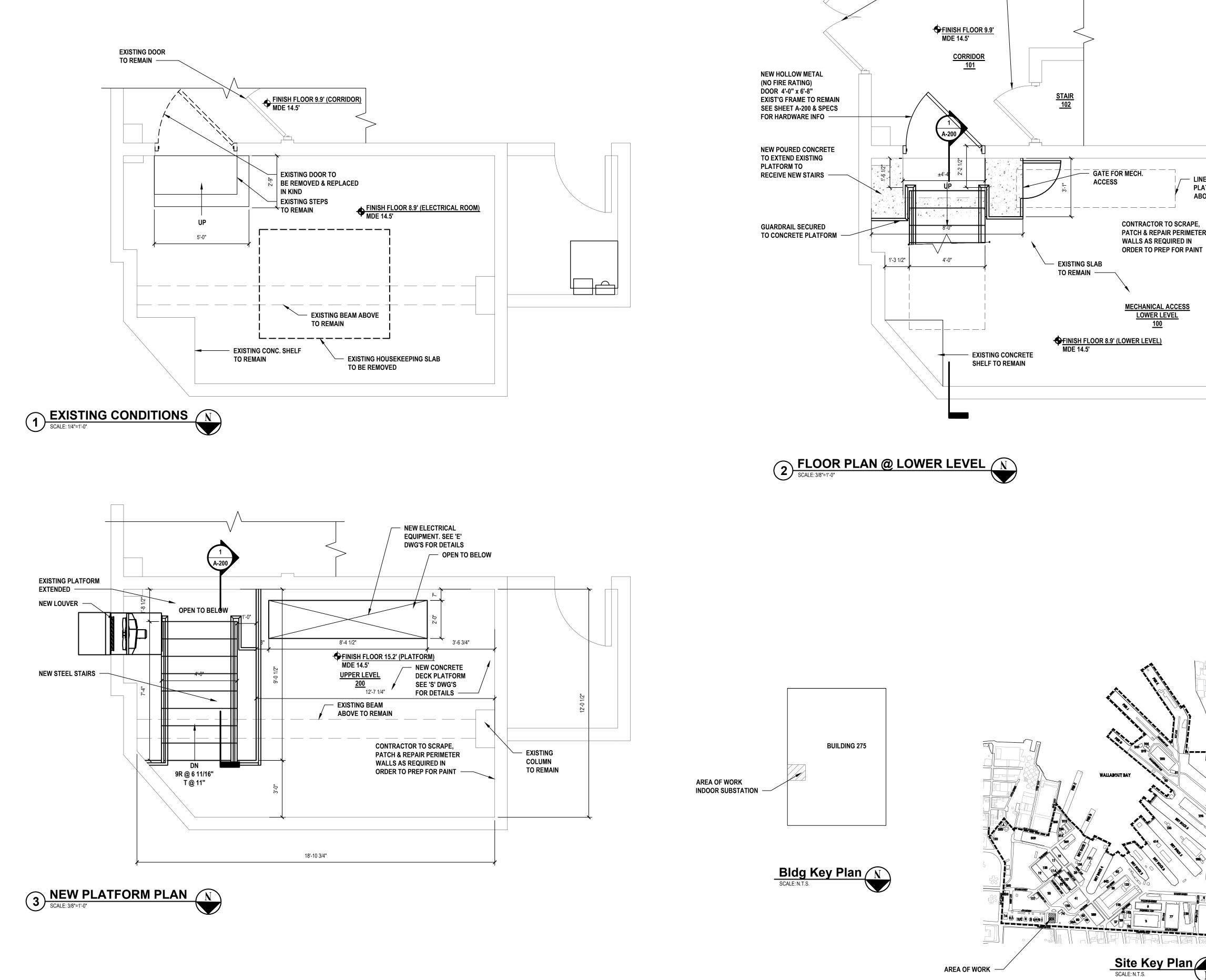
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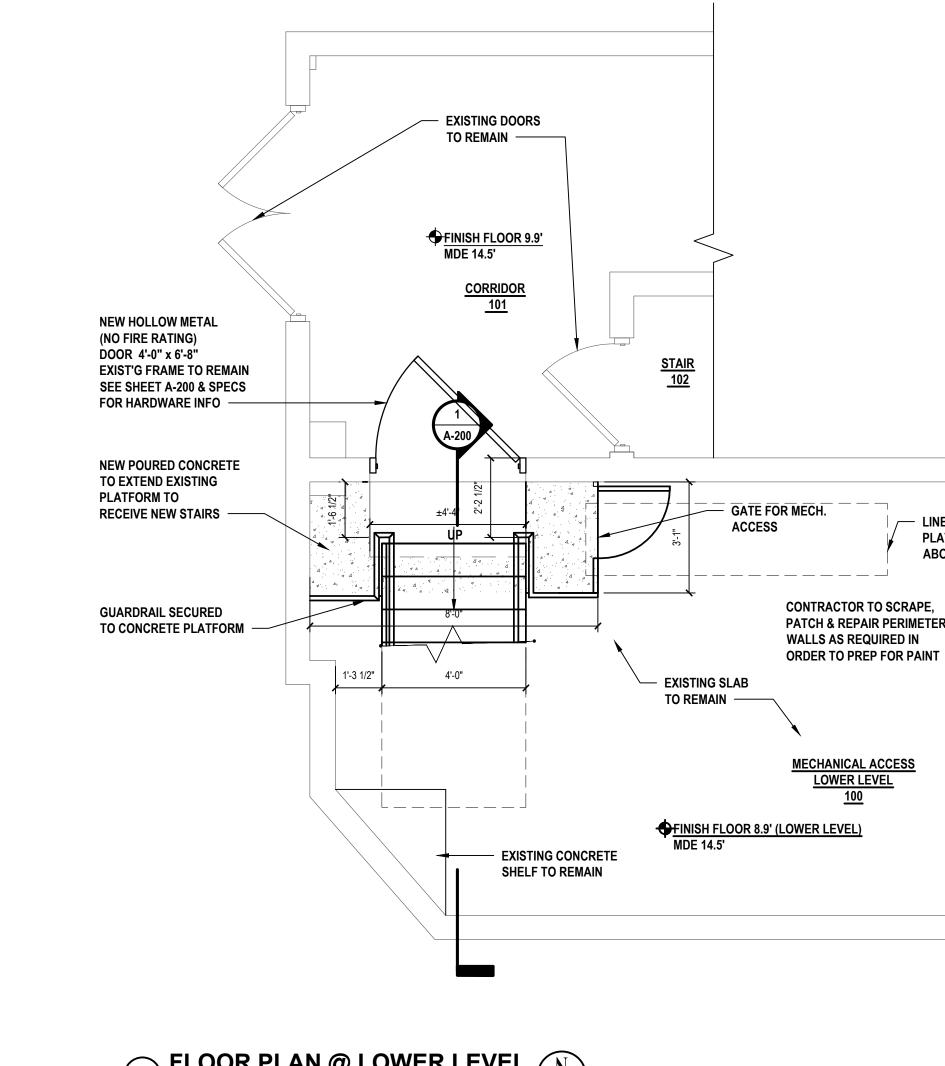
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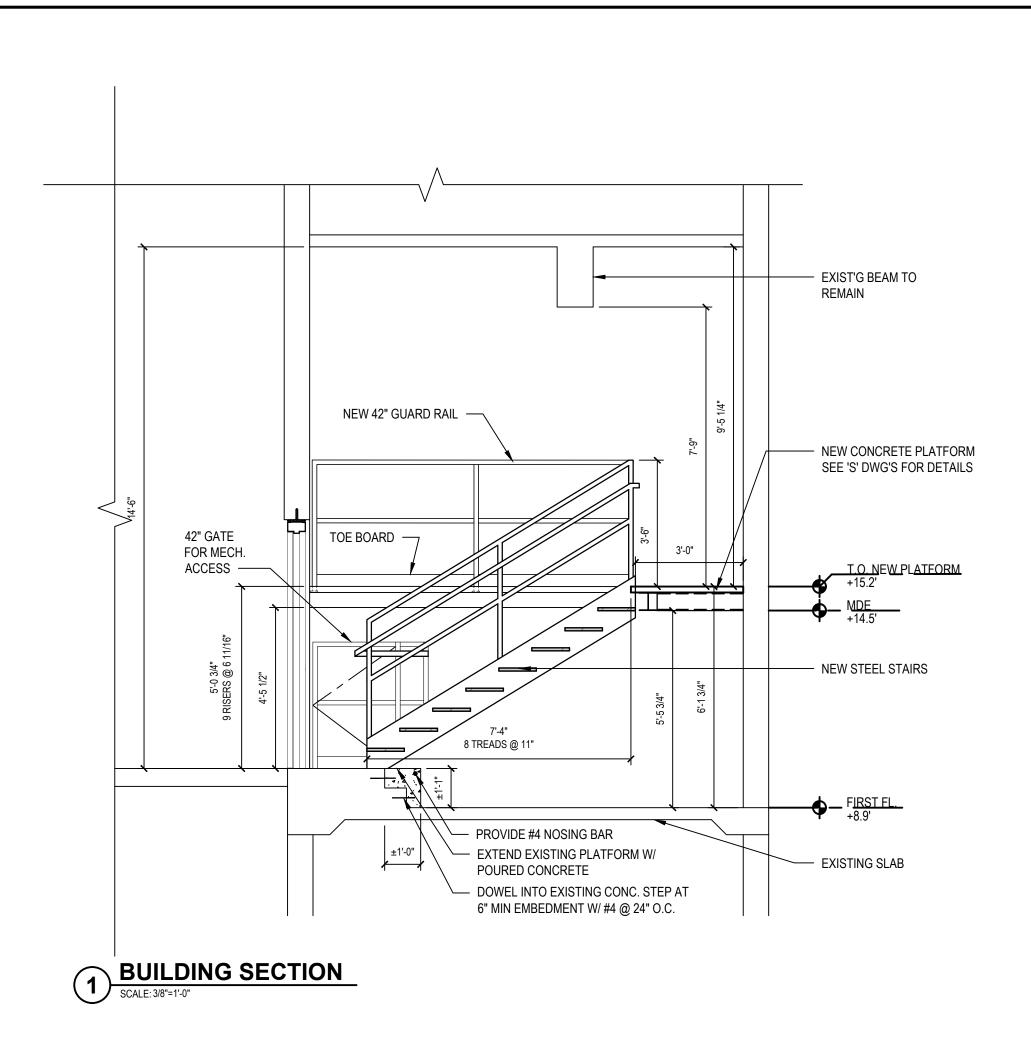
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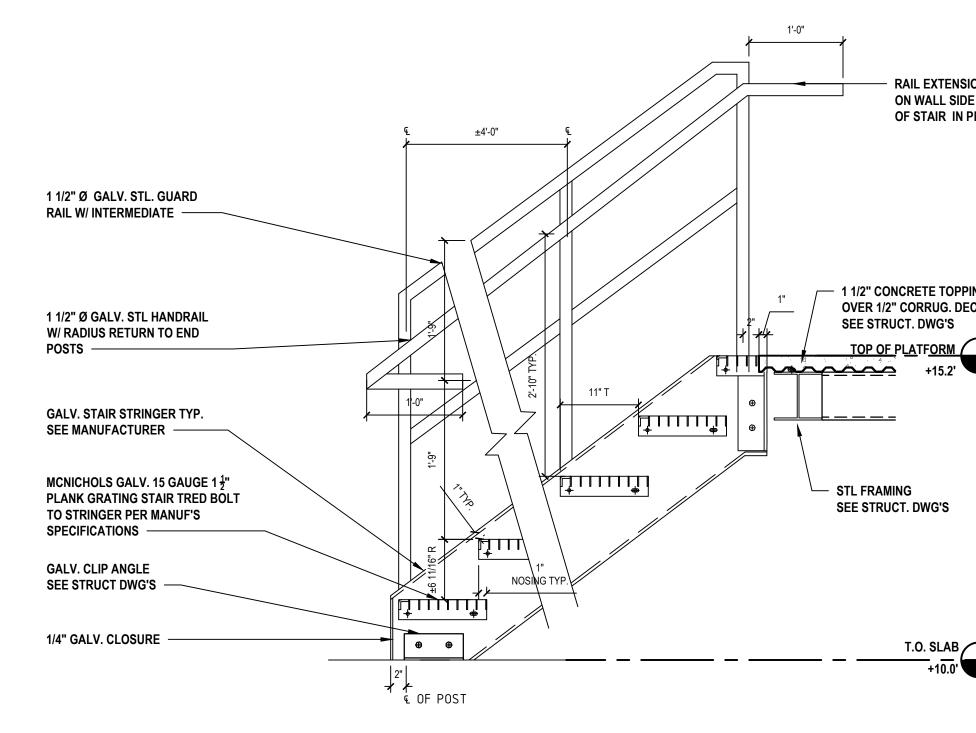
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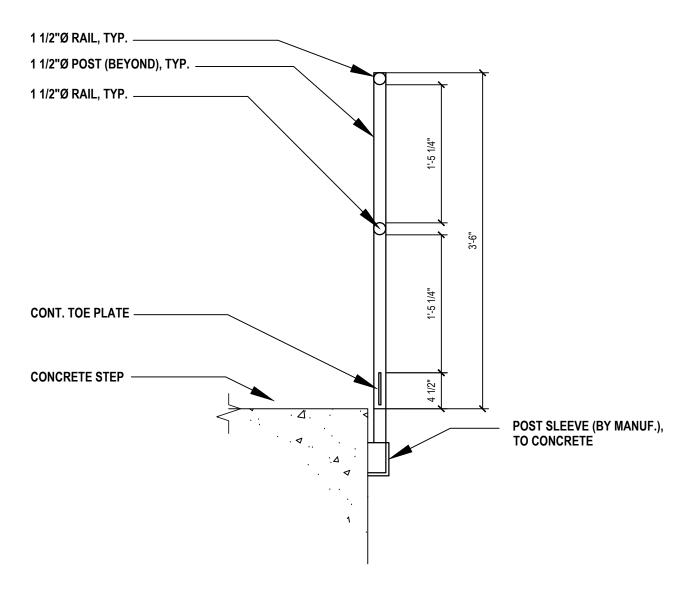


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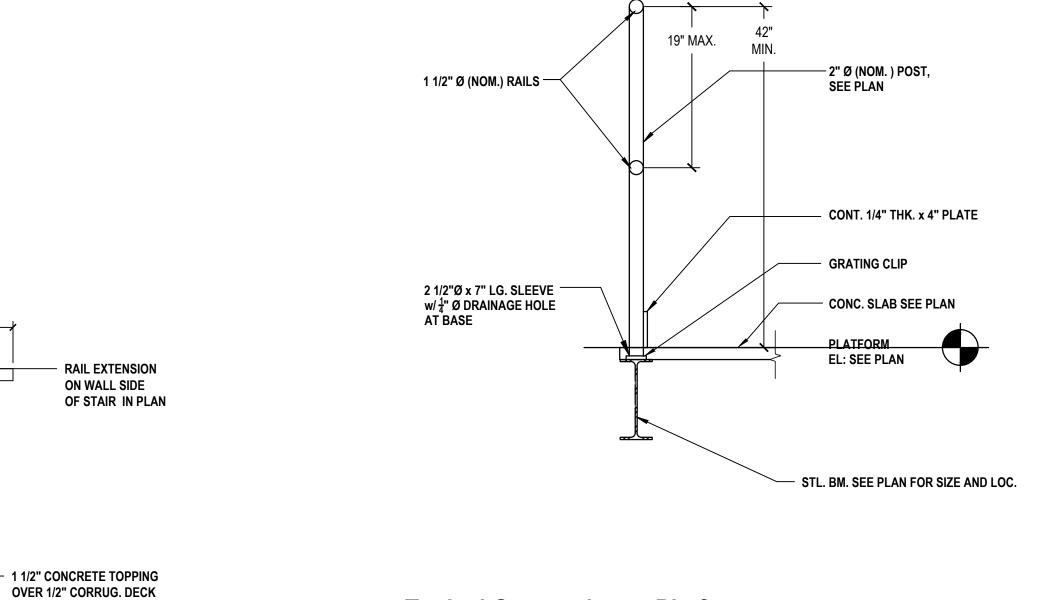
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T.O. SLAB +10.0'



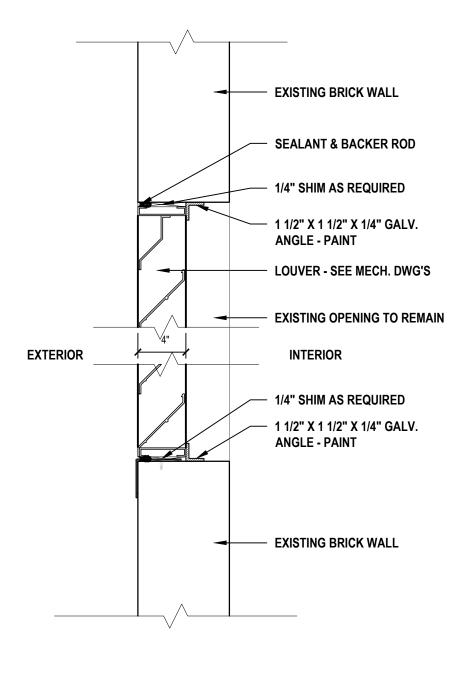








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RO		MAT'L	FINISH	MAT'L	FINISH	MAT'L	FINISH	
RM 100	ELECTRICAL ROOM	EXISTING		EXIST'G CONCRETE	PAINTED		-	
RM 200	ELECTRICAL ROOM	CONCRETE						



3 Louver Detail SCALE: 11/2"=1'-0"

	WARE SCHEDULE SPECIFICATIONS)
HARD	WARE SET #1
3 PR	HINGES
1	CLOSERS
1	PANIC DEVICE
1	MORTISE CYLINDER
1	COORDINATOR
1	X3 MORTISE/ RIM CYLINDER
1	DOOR BOTTOMS
1	WALL STOPS
1	KICKPLATES
1	SADDLE

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ALL DESIGN LOADS ARE IN ACCORDANCE WITH 2022 NYC BC IN CONJUNCTION WITH ASCE 7-16 AND IBC 2021

1. DE	AD LOADS					
	SWITCH G	EAR DEAD LOAD:	1800 LB/L	1800 LB/UNIT		
	GRATING [DEAD LOAD:	23 PSF			
2. LI\	/E LOADS					
	ELECTRIC/	AL ROOM:	75 PSF			
	LATERAL F	PRESSURE ON INTERIOR WALLS:	5 PSF			
3. SN	OW LOADS					
	NOTE: ALL	WORK IN THIS SCOPE IS INTERIOR SNO	OW LOAD IS NOT	APPLICABLE.		
4 SEI	SMIC LOADS					
	SITE CLAS		E			
	IMPORTAN	ICE FACTOR, le =	1.00			
	Ss =	0.276	S1 =	0.071		
	Fa =	2.42	Fv =	3.50		
	Sms =	0.667	Sm1 =	0.249		
	Sds =	0.444	Sd1 =	0.166		
	SEISMIC D	ESIGN CATEGORY:	С			
		METHOD: EQUIVALENT LATERAL FOR	•			
		ATERAL FORCE RESISTING SYSTEM:				
		ORDINARY REINFORCED CONCRET	E SHEAR WALLS			
		$R = 4.0$ $\Omega = 2.5$ $Cd = 4.0$				
		AR = 1.50 KIPS				
5. WI	ND LOADS					
	NOTE: ALL	WORK IN THIS SCOPE IS INTERIOR WIN	ID LOAD IS NOT A	PPLICABLE.		

6. FLOOD LOADS

FLOOD LOADING BASED ON BUILDING CODE, ASCE 24, ASCE 7, AND FEMA FIRMS AND PFIRMS IN EFFECT AT THIS SITE.

FLOOD ZONE:	COASTAL AE
BASE FLOOD ELEVATION (BFE NAVD):	11 FT
MITIGATION DESIGN ELEVATION (MDE):	14.5 FT

DESIGN FLOOD ELEVATION IS EQUAL TO BASE FLOOD ELEVATION PLUS 1'-0" FREEBOARD, PLUS 2'-6" PROJECTED SEA LEVEL RISE (MDE = BFE +1'-0" FB + 2'-6" SLR.)

GENERAL NOTES:

- SPECIFICATIONS ARE PART OF THE CONSTRUCTION DOCUMENTS AND MUST BE USED IN CONJUNCTION WITH THE DRAWINGS.
- THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS BY MEASUREMENTS AT THE JOB SITE AND SHALL TAKE ANY AND ALL OTHER MEASUREMENTS NECESSARY TO VERIFY THE DRAWINGS AND TO PERFORM THE WORK PROPERLY. ANY DISCREPANCY BETWEEN THE DRAWINGS AND THE MEASURED DIMENSIONS OF THE EXISTING SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER. NO WORK SHALL PROCEED UNTIL SUCH DISCREPANCY HAS BEEN RECTIFIED INCLUDING BUT NOT LIMITED TO FABRICATION OF MATERIALS. SUCH DISCREPANCIES BETWEEN THE DRAWINGS AND THE MEASURED DIMENSIONS SHALL NOT BE THE REASONS FOR ANY EXTRA COST OR DELAY IN THE EXECUTION OF THE WORK AND THE WORK SHALL BE PERFORMED AT NO EXTRA COST TO THE OWNER.
- ALL CONTRACTORS ARE REQUIRED TO VISIT THE SITE AND FULLY INFORM THEMSELVES AS TO THE EXISTING CONDITIONS AND LIMITATIONS PRIOR TO SUBMITTING THEIR PROPOSAL/BID. FAILURE TO VISIT THE SITE AND NOT FAMILIARIZING THEMSELVES WITH THE CONDITIONS AND LIMITATIONS WILL IN NO WAY RELIEVE THE SUCCESSFUL BIDDER FROM FURNISHING ANY MATERIALS OR PERFORMING ANY WORK THAT MAY BE REQUIRED TO COMPLETE THE WORK IN ACCORDANCE WITH THE DRAWINGS AND SPECIFICATIONS AT NO ADDITIONAL COST TO THE OWNER.
- THE CONTRACT STRUCTURAL DOCUMENTS REPRESENT THE FINISHED STRUCTURE. THE CONTRACTOR ALONE IS RESPONSIBLE FOR THE MEANS AND METHODS OF CONSTRUCTION AND SAFETY OF STRUCTURE AND WORKMEN DURING THE ENTIRE CONSTRUCTION PERIOD, WHICH SHALL INCLUDE BUT NOT BE LIMITED TO DESIGN AND INSTALLATION OF BRACING, SHORING FOR CONSTRUCTION EQUIPMENT, SHORING FOR THE BUILDING, FORMS AND SCAFFOLDING, SHORING OF RETAINING WALLS AND OTHER TEMPORARY SUPPORTS AS REQUIRED. ANY DAMAGE TO THE STRUCTURE IF OCCURRED SHALL BE RECTIFIED TO THE ENTIRE SATISFACTION OF THE OWNER AT NO ADDITIONAL COST TO THE OWNER. THE CONTRACTOR SHALL SCHEDULE THE WORK IN CONSULTATION WITH THE OWNER AND IN SUCH A WAY AS TO MINIMIZE THE CONFLICT OF THE OPERATION OF THE BUILDING. COMPLY WITH APPLICABLE REQUIREMENTS OF OSHA AND OTHER GOVERNING BODIES HAVING JURISDICTION AT THE SITE.
- IN CASE OF ANY DAMAGE TO THE CONSTRUCTION, THE CONTRACTOR SHALL REPAIR THE SAME TO THE SATISFACTION OF THE OWNER AT NO ADDITIONAL COST TO THE OWNER.
- THE CONTRACTOR SHALL INFORM THE ENGINEER OF ANY DEMOLITION. ALTERATIONS REQUIRED OR INTERFERENCES NOT SHOWN ON THE DEMOLITION DRAWINGS FOR RESOLUTION. THE CONTRACTOR SHALL ALLOW 7 WORKING DAYS FOR RESOLUTION OF THE CONDITION UNLESS ADDITIONAL TIME IS STATED TO BE REQUIRED BY THE ENGINEER.
- TYPICAL DETAILS ON DRAWINGS APPLY TO SITUATIONS OCCURRING ON THE PROJECT THAT ARE THE SAME OR SIMILAR TO THOSE SPECIFICALLY DETAILED. SUCH DETAILS APPLY WHETHER OR NOT DETAILS ARE REFERENCED AT EACH LOCATION. NOTIFY ENGINEER OF CONFLICTS REGARDING APPLICABILITY OF TYPICAL DETAILS.
- DO NOT LOAD THE FINISHED SLAB WITH ERECTION EQUIPMENT. DO NOT STACK CONSTRUCTION MATERIALS ON DECKS/SLABS. DO NOT CAUSE IMPACT LOADS TO DECK/SLAB DURING CONSTRUCTION.
- VERIFY THE LOCATION OF CHASES, INSERTS, OPENINGS, SLEEVES, FINISHES, DEPRESSIONS, PADS, AND WALL OPFNINGS.
- PRINCIPAL OPENINGS THROUGH THE FRAMING AND SLABS ARE SHOWN ON DRAWINGS. COORDINATE WITH THE 10 ARCHITECTURAL, MECHANICAL, AND ELECTRICAL DRAWINGS FOR ALL REQUIRED OPENINGS AND PROVIDE FOR REQUIRED OPENINGS WHETHER SHOWN ON THE STRUCTURAL DRAWINGS OR NOT. VERIFY SIZE AND LOCATION OF OPENINGS WITH MECHANICAL/ELECTRICAL TRADES. DEVIATIONS FROM THE OPENINGS SHOWN ON THE STRUCTURAL DRAWINGS MUST BE APPROVED PRIOR TO CONSTRUCTION/FABRICATION OF THE REQUIRED OPENINGS.
- LOADINGS FOR MECHANICAL & ELECTRICAL EQUIPMENT ARE BASED ON THE UNITS SHOWN ON THE MECHANICAL & ELECTRICAL DRAWINGS. ANY CHANGES IN TYPE, SIZE OR NUMBER OF PIECES OF EQUIPMENT SHALL BE REPORTED TO THE ARCHITECT/ENGINEER FOR VERIFICATION OF THE ADEQUACY OF SUPPORTING MEMBERS PRIOR TO THE PLACEMENT OF SUCH EQUIPMENT.
- 12. SEE ARCHITECTURAL DRAWINGS FOR ELEVATIONS NOT SHOWN AND FOR EXACT LOCATIONS OF ALL SLAB DEPRESSIONS AND HOUSEKEEPING PADS. THE CONTRACTOR SHALL COMPARE THE STRUCTURAL SECTIONS WITH ARCHITECTURAL SECTIONS AND REPORT ANY DISCREPANCY TO THE ARCHITECT PRIOR TO FABRICATING OR INSTALLING STRUCTURAL MEMBERS.

DELEGATED DESIGN NOTES

- ANY BUILDING COMPONENTS WHERE DESIGN IS DELEGATED TO AN ENTITY SEPARATE FROM THE ENGINEER/ARCHITECT OF RECORD WITHIN THE DRAWINGS AND/OR SPECIFICATIONS SHALL BE DESIGNED IN SUBMITTED BY CONTRACTOR FOR REVIEW AND APPROVAL TO EOR PRIOR TO SUBMITTING SHOP DRAWINGS AND CALCULATIONS.
- ADDITIONAL DESIGN LOADS INDICATED ON STRUCTURAL DRAWINGS SHALL BE IDENTIFIED AS FOLLOWS: DL = DEAD LOAD LL = LIVE LOAD WL = WIND LOAD EQ = SEISMIC LOAD Lr = ROOF LIVE LOAD SL = SNOW LOAD

DESIGN CODES/REFERENCE FOR DESIGN AND DELEGATED DESIGN

- 1. AWS D1.4-2018 STRUCTURAL WELDING CODE STEEL
- 3. ANSI / AISC 360-22, SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS.

- 6. LIVE LOAD REDUCTION ON SUPPORTING ELEMENTS IN ACCORDANCE WITH 2022 NYC BC

CONCRETE REINFORCING NOTES:

- ACI 315 AND ACI 318.
- 2. STEEL REINFORCING BARS SHALL BE NEW BILLET STEEL IN ACCORDANCE WITH ASTM A 615, GRADE 60, U.O.N.
- TEMPLATE. SECURELY ATTACH EMBEDDED ITEMS TO FORMWORK OR REINFORCING.
- 90-DEGREE HOOKS IN ACCORDANCE WITH ACI 318, UNLESS NOTED OTHERWISE.
- MAINTAIN THE FOLLOWING CONCRETE COVER FOR REINFORCING STEEL, UNLESS NOTED OTHERWISE: A. CONCRETE CAST AGAINST EARTH: 3 INCHES B. CONCRETE EXPOSED TO WEATHER OR IN CONTACT WITH THE GROUND: NO. 6 BARS AND LARGER: 2 INCHES NO. 5 BARS AND SMALLER: 1 1/2 INCHES
- C. CONCRETE NOT EXPOSED TO WEATHER AND NOT IN CONTACT WITH THE GROUND: SLABS AND WALLS: NO. 14 BARS AND LARGER: 1 1/2 INCHES
 - NO. 11 BARS AND SMALLER: 3/4 INCHES
 - BEAMS, COLUMNS, PEDESTALS, AND GRADE BEAMS: ALL BAR SIZES: 1 1/2 INCHES
- STRUCTURAL ENGINEER.
- 40 REINFORCING BARS WHERE DETAILED BARS ARE TO BE WELDED TO A STEEL SECTION.
- 8. WHERE REQUIRED, PROVIDE DOWELS TO MATCH SIZE AND SPACING OF MAIN REINFORCING.
- CORNERS AND INTERSECTIONS AS SHOWN ON TYPICAL BAR PLACING DETAILS.

CONCRETE NOTES:

- PROVIDE ADMIXTURES AND SPECIAL REQUIREMENTS AS SPECIFIED.
- A. ALL CONCRETE SHALL BE NORMAL WEIGHT (145 PCF) CONCRETE fc = 3,000 PSI AT 28 DAYS.
- STRUCTURAL ENGINEER.
- 3 SLABS FOR REVIEW AND APPROVAL PRIOR TO INSTALLATION.
- 4. WIRE BRUSH AND CLEAN CONSTRUCTION JOINTS PRIOR TO POURING NEW CONCRETE.
- OPENINGS THROUGH THE SLABS, WALLS AND FLOOR DECK.

ACCORDANCE WITH MINIMUM LOADS SPECIFIED ABOVE. ANY DEVIATION FROM NOTED LOAD VALUES SHALL BE

2. ACI 318 BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE, 2019 EDITION

4. STRUCTURAL WELDED WIRE REINFORCEMENT MANUAL OF STANDARD PRACTICE, WIRE REINFORCEMENT INSTITUTE

5. STRUCTURAL WELDED WIRE REINFORCEMENT MANUAL OF STANDARD PRACTICE, WIRE REINFORCEMENT INSTITUTE

PROVIDE DETAILING, FABRICATION, AND INSTALLATION OF REINFORCING AND ACCESSORIES IN ACCORDANCE WITH

COORDINATE PLACEMENT OF CAST-IN-PLACE EMBEDMENTS AND ANCHOR RODS. SET ANCHOR RODS WITH A

PROVIDE CLASS "B" REINFORCEMENT SPLICES FOR CONTINUOUS REINFORCEMENT. PROVIDE STANDARD

6. DO NOT WELD OR BEND REINFORCEMENT IN THE FIELD UNLESS SPECIFICALLY SHOWN OR APPROVED BY

WHEN SPECIFICALLY APPROVED, PROVIDE WELDED REINFORCEMENT IN ACCORDANCE WITH ASTM A 706 GRADE 60. USE LOW HYDROGEN ELECTRODES FOR WELDING OF REINFORCEMENT IN CONFORMANCE WITH "RECOMMENDED PRACTICES FOR WELDING REINFORCING STEEL", AMERICAN WELDING SOCIETY, AWS D12.1. PROVIDE ASTM GRADE

9. PROVIDE CONTINUOUS HORIZONTAL WALL REINFORCEMENT WITH 90-DEGREE BENDS AND EXTENSIONS AT

PROVIDE BATCH MIXING. TRANSPORTATION. PLACING AND CURING OF CONCRETE IN ACCORDANCE WITH RECOMMENDATIONS OF ACI 301 AND ACI 318. USE TYPE I PORTLAND CEMENT UNLESS NOTED OTHERWISE.

2. PROVIDE CONCRETE MIXES DESIGNED BY A QUALIFIED TESTING LABORATORY FOR REVIEW AND APPROVAL BY THE

PROVIDE CONSTRUCTION AND CONTROL JOINTS AS REQUIRED BY A.C.I. CODE AND AS INDICATED ON DRAWINGS. SUBMIT PLAN TO ENGINEER INDICATING PROPOSED CONTROL AND EXPANSION JOINT LOCATIONS IN CONCRETE

5. PROVIDE ADEQUATE STRUCTURAL FRAMING AS APPROVED BY STRUCTURAL ENGINEER FOR MECHANICAL

ST

F	<u> NTJUS</u>	JRAL STEEL NOTES:	ME	ETA
		IL AND ERECT STRUCTURAL STEEL ELEMENTS IN ACCORDANCE WITH THE FOLLOWING: AISC SPECIFICATION FOR THE DESIGN, FABRICATION, AND ERECTION OF STRUCTURAL STEEL FOR	1.	PF "C
	BL	JILDINGS.		
	Β.	AISC MANUAL OF STEEL CONSTRUCTION.	2.	FC
	C.	AISC CODE OF STANDARD PRACTICE FOR STEEL BUILDINGS AND BRIDGES.		HI
	D.	AWS STRUCTURAL WELDING CODE, D1.1.		
			3.	A
	PROV	IDE STRUCTURAL STEEL OF THE FOLLOWING ASTM DESIGNATIONS UNLESS NOTED OTHERWISE:		IN
	Α.	STRUCTURAL STEEL WIDE FLANGE SHAPES: ASTM A 992, Fy = 50 KSI		UF
	В.	EDGE ANGLES, BENT PLATES, HANGERS AND BRACES: ASTM A 36, Fy = 36 KSI		-
	C.	STRUCTURAL PIPE: ASTM A 53, GRADE B, TYPE E OR S, FY = 46 KSI	4.	LA
	D.			

D. HOLLOW STRUCTURAL SHAPES: ASTM A 500, GRADE B, FY = 46 KSI

E. PLATES: ASTM A 36, FY = 36 KSI

3. CONNECTION MATERIALS:

A. BEAM-COLUMN STIFFENER PLATES AND DOUBLER PLATES TO MATCH THE GRADE STEEL OF STRUCTURAL ELEMENT.

B. HIGH STRENGTH BOLTS: ASTM A 325 OR A 490. SEE NOTE D.

C. HARDENED STEEL WASHERS: ASTM F 436 D. CONNECTION DESIGN SHALL BE CONSISTENT WITH BOLT SIZE AND GRADE THROUGHOUT JOB AT SIMILAR CONNECTIONS. ONLY ONE GRADE OF STEEL BOLT SHALL BE USED FOR ENTIRE CONSTRUCTION FOR EACH BOLT SIZE SPECIFIED AND INSTALLED.

4. WELD MINIMUM SIZE AND STRENGTH: A. PROVIDE MINIMUM SIZE OF FILLET WELDS AS SPECIFIED IN TABLE J2.4 OF THE AISC MANUAL. B. PROVIDE MINIMUM EFFECTIVE THROAT THICKNESS OF PARTIAL PENETRATION GROOVE WELDS AS SPECIFIED

- IN TABLE J2.3 OF THE AISC MANUAL. C. DEVELOP THE FULL TENSILE STRENGTH OF THE MEMBER ELEMENT JOINED, ON ALL SHOP AND FIELD WELDS, UNLESS NOTED OTHERWISE ON THE DRAWINGS.
- D. WHERE CONNECTIONS ARE NOTED ON DRAWINGS AS MOMENT CONNECTIONS, PROVIDE WELDS TO DEVELOP FULL FLEXURAL CAPACITY OF THE LESSER MEMBER.
- E. PROVIDE ELECTRODES FOR FIELD OR SHOP WELDING THAT CONFORM TO ASTM A 233 (CLASS 70). F. ALL WELDS ARE CONTINUOUS FOR THE FULL LENGTH OF THE CONNECTION UNLESS NOTED OTHERWISE ON DRAWINGS.

5. PROVIDE MINIMUM OF TWO BOLTS PER CONNECTION. PROVIDE MINIMUM BOLT DIAMETER OF 3/4 INCH.

- 6. PROVIDE BOLTS, NUTS AND WASHERS THAT ARE HOT DIP GALVANIZED ACCORDING TO ASTM A 153, CLASS C WHEN USED TO CONNECT STEEL ELEMENTS THAT ARE HOT DIP GALVANIZED AFTER FABRICATION.
- 7. SUBMIT CALCULATIONS FOR CONNECTION DESIGNS NOT FULLY DETAILED ON DRAWINGS. DESIGN CONNECTIONS UNDER SUPERVISION OF REGISTERED PROFESSIONAL ENGINEER, REGISTERED IN THE STATE WHERE PROJECT IS BEING CONSTRUCTED, EMPLOYED BY THE STEEL FABRICATOR. DESIGN CALCULATIONS TO BE SEALED BY FABRICATOR'S REGISTERED PROFESSIONAL ENGINEER. SHOP DRAWINGS SUBMITTED WITHOUT COMPLETE DESIGN CALCULATIONS WILL NOT BE REVIEWED.
- PROVIDE SIMPLE SHEAR CONNECTIONS FOR STEEL CONNECTIONS NOT FULLY DETAILED BY UTILIZING HIGH STRENGTH BEARING BOLTS IN SINGLE OR DOUBLE SHEAR. PROVIDE DOUBLE ANGLE BOLTED CONNECTIONS WHERE POSSIBLE. UNLESS LARGER REACTION IS SHOWN ON DRAWINGS, CONNECTION DESIGNER SHALL DESIGN SHEAR CONNECTIONS TO RESIST THE REACTION RESULTING FROM THE MAXIMUM ALLOWABLE UNIFORM LOAD OF THE BEAM FOUND IN THE AISC SPECIFICATION BEING APPLIED ALONG ITS FULL LENGTH.
- 9. STEEL FABRICATION:
 - A. FABRICATE AND ASSEMBLE STRUCTURAL MEMBERS/ASSEMBLIES IN SHOP TO GREATEST EXTENT POSSIBLE. B. SPLICING OF STRUCTURAL STEEL MEMBERS IS PROHIBITED WITHOUT PRIOR APPROVAL BY THE EOR. C. FABRICATOR SHALL BE RESPONSIBLE FOR ALL ERRORS OF DETAILING ON THE SHOP DRAWINGS, ERRORS IN
 - FABRICATION, AND THE CORRECT FITTING OF STRUCTURAL STEEL MEMBERS. D. CONFORM TO THE AISC CODE OF STANDARD PRACTICE, FOR ERECTION TOLERANCES. FIELD MODIFICATION TO STRUCTURAL STEEL IS PROHIBITED WITHOUT PRIOR APPROVAL BY THE EOR.
 - E. CLEAN STEEL OF RUST, LOOSE MILL SCALE AND OTHER FOREIGN MATERIALS WHERE REQUIRED FOR FABRICATION, FITTING UP, OR WELDING.
 - F. DO NOT CUT STRUCTURAL STEEL MEMBERS FOR THE WORK OF OTHER TRADES WITHOUT PRIOR REVIEW AND APPROVAL OF THE ARCHITECT/ENGINEER.
 - G. SHOP PRIME ALL MEMBERS NOT SCHEDULED FOR GALVANIZING WITH RED OXIDE PRIMER UNLESS NOTED OTHERWISE. DO NOT PAINT AT LOCATIONS OF FIELD WELDS.
- 10. FURNISH STEEL SHOP DRAWINGS FOR ARCHITECT'S AND STRUCTURAL ENGINEER'S REVIEW PRIOR TO FABRICATION. INCLUDE WELDING PROCEDURES, TESTING PROGRAMS FOR WELDING AND HIGH STRENGTH BOLTING, COATING MATERIAL AND ERECTION SEQUENCE ON SHOP DRAWINGS. SHOP DRAWINGS SHALL NOT BE REPRODUCTIONS OF CONTRACT DOCUMENTS. SHOP DRAWINGS SHALL BE PREPARED UNDER THE SUPERVISION OF, AND SHALL BE SIGNED AND SEALED BY, A LICENSED PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF NEW YORK.
- 11. PROVIDE TEMPORARY SHORING OR BRACING DURING CONSTRUCTION PHASE PRIOR TO COMPLETING CONNECTIONS AND INSTALLATION OF FLOOR SLAB. TEMPORARY CONSTRUCTION BRACING OF THE STRUCTURAL STEEL FRAME IS THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL REMAIN IN PLACE UNTIL AFTER THE PERMANENT BRACING SYSTEM HAS BEEN COMPLETED.

PROVIDE SIX INCH CLOSURE STRIP WHERE CHANGES IN DECK DIRECTION OCCUR. CLOSURE TO BE SAME GAGE AS 5.

6. AT ENDS OF DECKS OR WHERE CHANGES OF DECK DIRECTION OCCUR. FASTEN TO SUPPORTS AT EACH FLUTE. PROVIDE ADEQUATE CLOSURES AND FASTENERS TO SIDES AT EIGHTEEN INCHES ON CENTER.

WHERE PARTIAL PANELS MAY BE REQUIRED TO COMPLETE DECK INSTALLATION AT PERIMETER OF STRUCTURE, PROVIDE WELDS IN EACH FLUTE TO STRUCTURAL MEMBERS. INSTALL DECK IN THREE CONTINUOUS SPAN LENGTHS.

SPECIAL INSPECTIONS SHALL MEET THE REQUIREMENTS OF NYC BC CHAPTER 17. SPECIAL INSPECTOR(S) SHALL BE RETAINED BY THE OWNER TO PERFORM THE REQUIRED SPECIAL INSPECTIONS. THE NAMES OF PERSONS OR FIRMS WHO ARE TO PERFORM THE SPECIAL INSPECTIONS SHALL BE FORWARDED TO THE BUILDING OFFICIAL FOR APPROVAL. THE SPECIAL INSPECTOR(S) SHALL COMPLETE AND SUBMIT ALL FORMS REQUIRED BY NEW YORK CITY.

A. OBSERVE THE WORK ASSIGNED FOR CONFORMANCE TO THE APPROVED DRAWINGS AND SPECIFICATIONS. B. FURNISH INSPECTION REPORTS TO THE ENGINEER OF RECORD AND BUILDING DEPARTMENT. DISCREPANCIES SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE CONTRACTOR FOR CORRECTION, THEN, IF NOT

CORRECTED TO THE ENGINEER AND THE BUILDING DEPARTMENT. C. SUBMIT TO THE ENGINEER OF RECORD AND THE BUILDING DEPARTMENT A SIGNED FINAL REPORT STATING THAT

<u>AL DECK:</u>

PROVIDE DESIGN, FABRICATION, AND ERECTION OF METAL DECK CONFORMING TO THE STEEL DECK INSTITUTE'S "CODE OF RECOMMENDED STANDARD PRACTICE AND BASIC DESIGN SPECIFICATIONS".

FORM ROOF AND FLOOR DECK FROM STEEL SHEETS CONFORMING TO ASTM A 611 GRADE C AND D OR A 653 OR HIGHER SPECIFICATIONS WITH A MINIMUM YIELD STRENGTH OF 33 KSI.

ATTACH SHEETS TO STEEL SUPPORT MEMBERS AS INDICATED AND IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS FOR INSTALLATION. WHEN DECK IS SCHEDULED TO BE EXPOSED, DE-SLAG, CLEAN AND TOUCHED UP WELDS WITH A ZINC-RICH PRIMER.

LAP ROOF AND FLOOR DECK ENDS MINIMUM OF 2 INCHES. WHEN FASTENING DECK TO SUPPORT MEMBERS PROVIDE WELDING MATERIALS INSTALLATION PROCEDURES TO PREVENT BURNING OF HOLES IN DECK.

8. AT PERIMETER OF DECK, SECURE DECK TO STRUCTURAL MEMBERS WITH SAME ATTACHMENT AND SPACING SUPPORT ATTACHMENT AS INDICATED ON PLANS.

SPECIAL INSPECTION NOTES

1. THE SPECIAL INSPECTOR(S) SHALL:

THE WORK WAS IN CONFORMANCE WITH THE APPROVED DRAWINGS AND SPECIFICATIONS AND THE APPLICABLE WORKMANSHIP PROVISIONS OF THE NYC BC.

INSPECTION REQUIREMENTS (2022 NYC CODE)

SPECIAL INSPECTIONS (NYC BUILDINGS TR1)

- STRUCTURAL STEEL WELDING
- STRUCTURAL STEEL DETAILS
- STRUCTURAL STEEL HIGH STRENGTH BOLTING
- CONCRETE CAST IN PLACE
- POST INSTALLED ANCHORS

28-116.2.1, BC 110.2

BC 1705.2.1

BC 1705.2.2

BC 1705.2.3

BC 1705.3

BC 1705.3

PROGRESS INSPECTIONS (NYC BUILDINGS TR1)

PRELIMINARY

28-116.2.4, BC 110.5 **DIRECTIVE 14 OF 1975** & 1 RCNY § 101-10

NYC DOB EMPLOYEE STAMP/SIGNATURE

DOB APPLICAITON #B0094105-S2

B00994105-I1

B00994105-S2

B00994105-S1

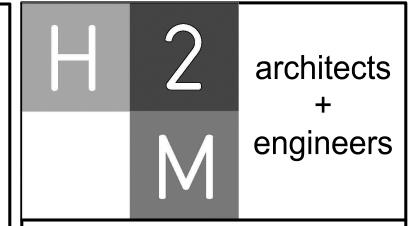
RELATED APPLICATIONS:

MECHANICAL:

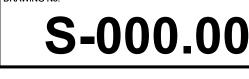
STRUCTURAL:

ARCHITECTURAL:

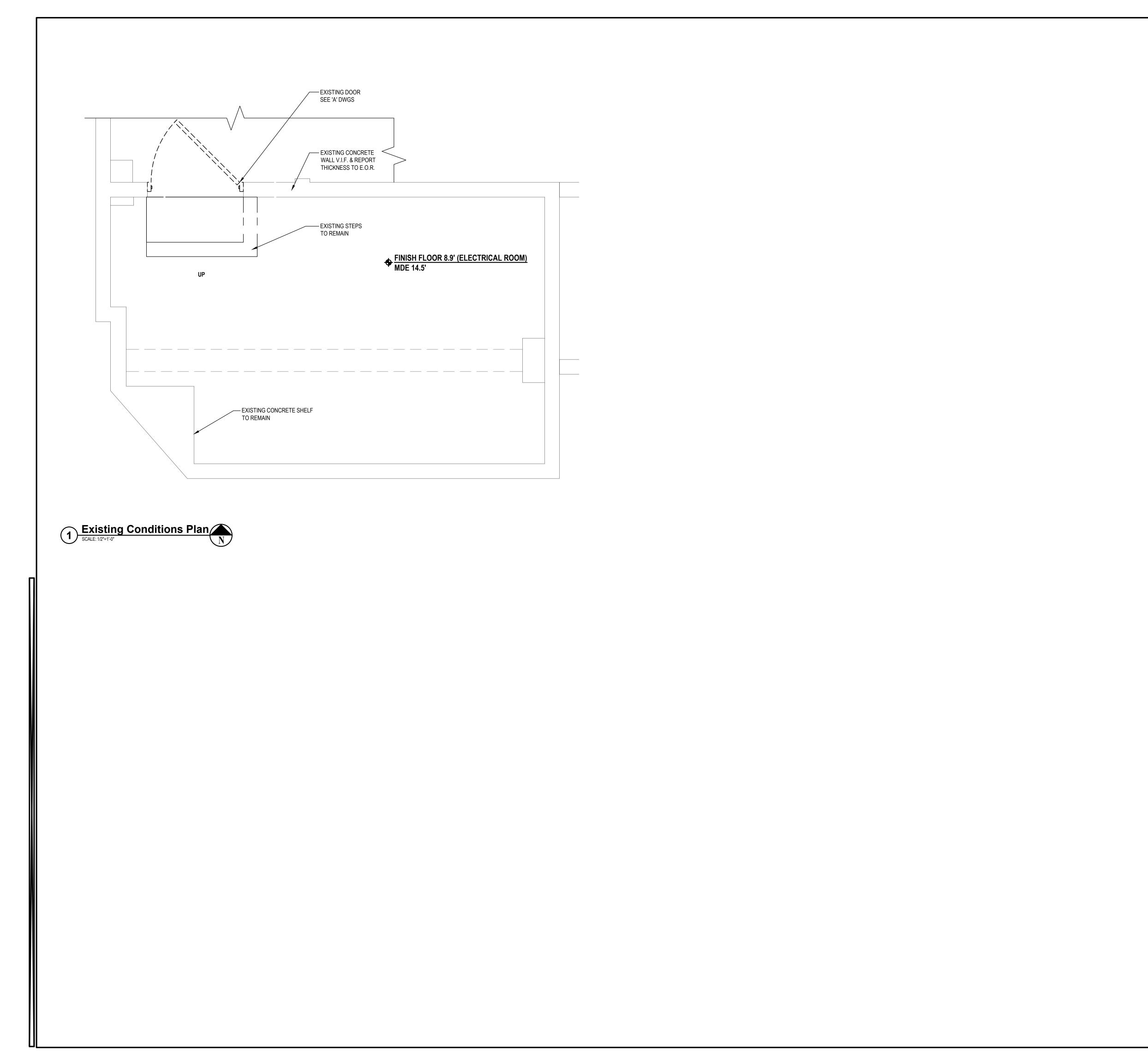
TR-2 REQUIREMENTS HAVE BEEN WAIVED BY THE ENGINEER OF RECORD SINCE TOTAL CONCRETE PLACEMENT IS LESS THAN 50 CUBIC YARDS.



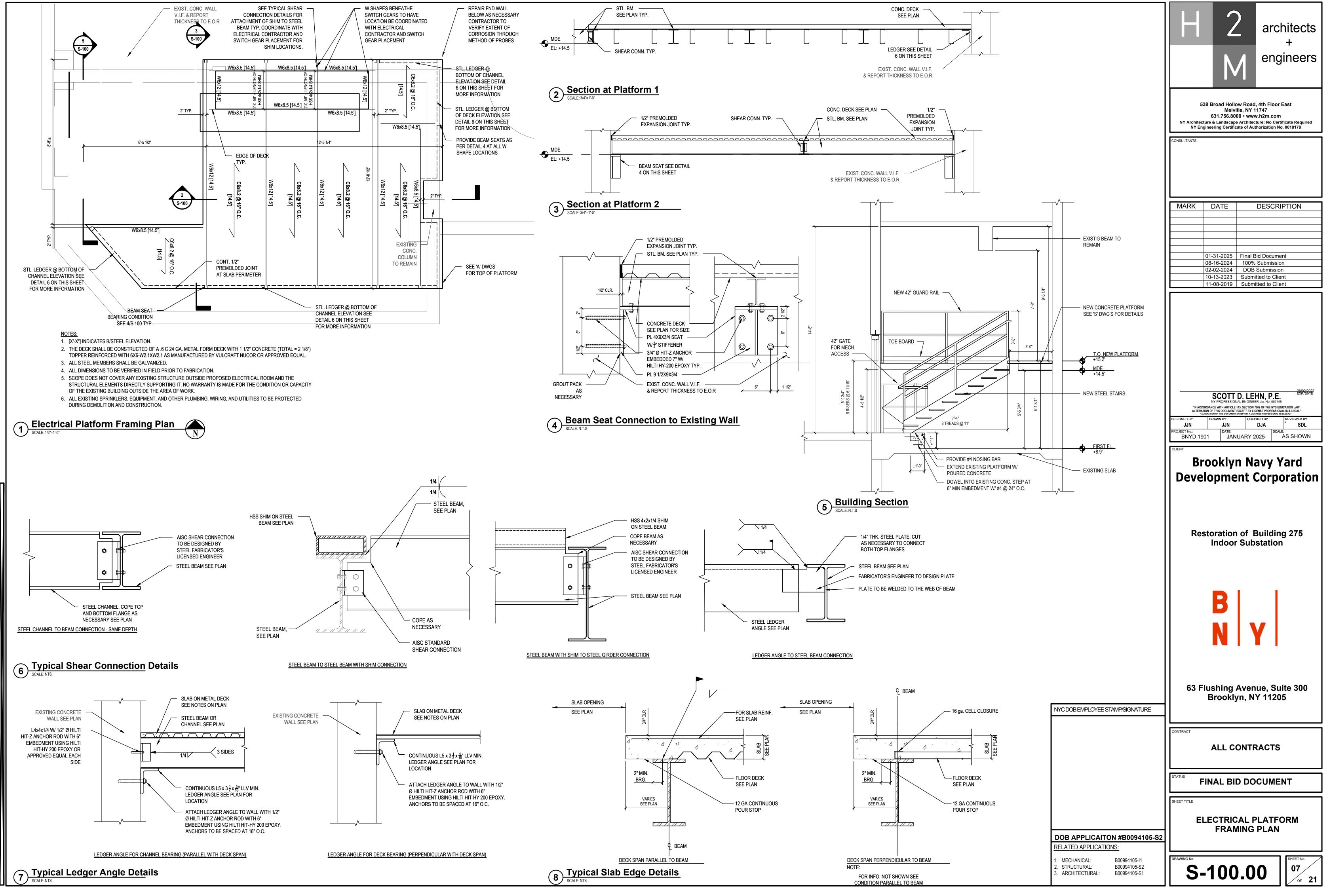
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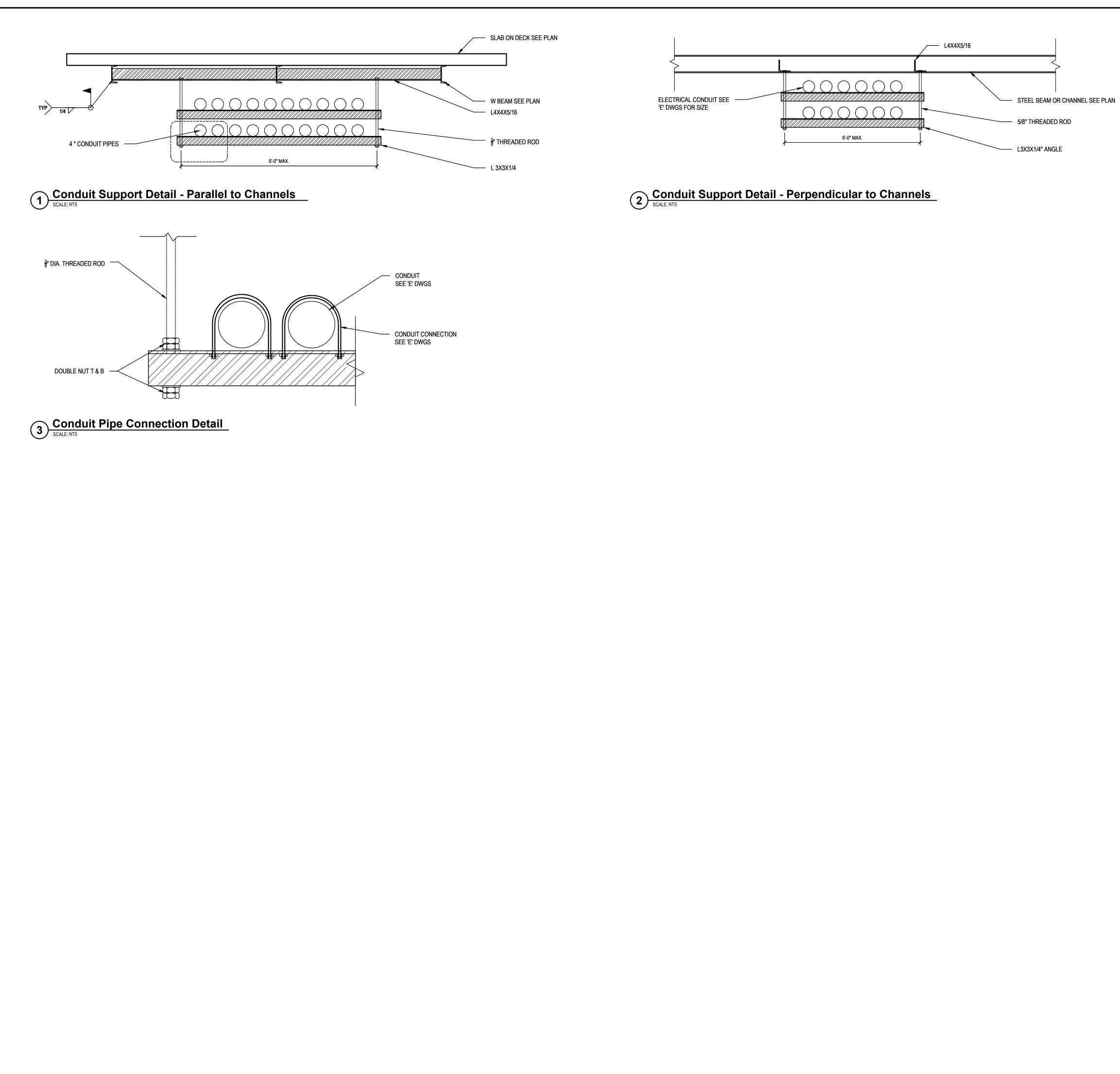




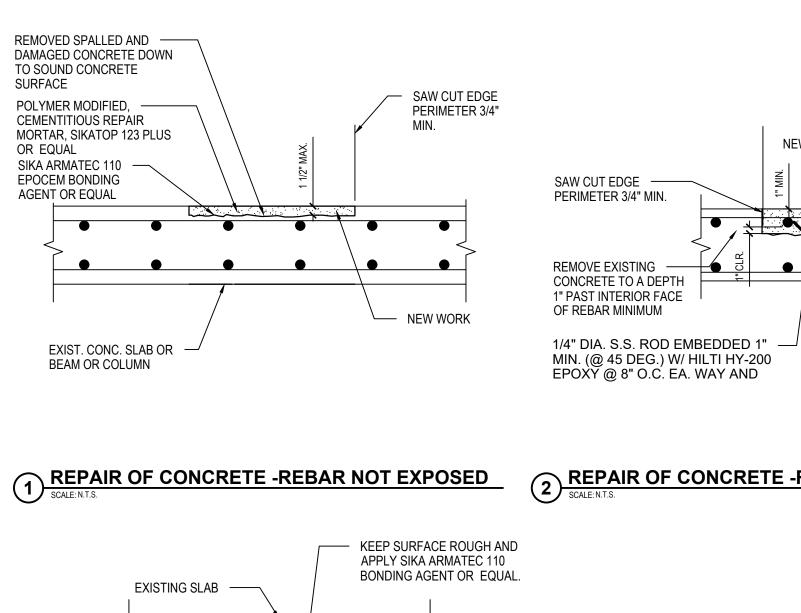


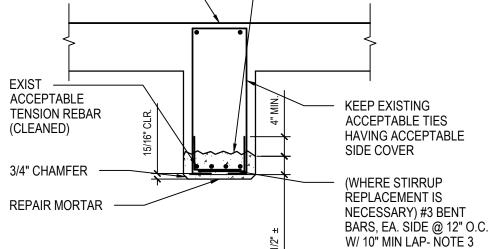
	HPBArchitects t angineersMArchitects t angineersSta Broad Hollow Road, 4th Floor East Melville, NY 11747 S1.756.800 · www.h2m.comMarchitecture & Landscape Architecture: No Certificate Required Derificate of Authorization No. 0018178CONSULTANTS:
	MARK DATE DESCRIPTION
	28/02/2027 EXP. DATE EXP. DATE IN ACCORDANCE PROFESSIONAL ENGINEER LIC. NO. 087145 IN ACCORDANCE MARTICLE 143, SECTION 7900 OF THE NYE DUCATION LAW, ALTERATION OF THIS DOCUMENT EXCEPT BY LICENSE PROFESSIONAL IS ILLEGA! DESIGNED BY ALTERATION OF THIS DOCUMENT EXCEPT BY LICENSE PROFESSIONAL IS ILLEGA! DESIGNED BY SRK DJA SOL PROJECT NO: BNYD 1901 DATE: JANUARY 2025 SCALE: AS SHOWN CLIENT Brooklyn Navy Yard Development Corporation
	Restoration of Building 275 Indoor Substation
NYC DOB EMPLOYEE STAMP/SIGNATURE	63 Flushing Avenue, Suite 300 Brooklyn, NY 11205
DOB APPLICAITON #B0094105-S2 RELATED APPLICATIONS:	STATUS FINAL BID DOCUMENT
RELATED APPLICATIONS:1. MECHANICAL:B00994105-I12. STRUCTURAL:B00994105-S23. ARCHITECTURAL:B00994105-S1	DRAWING NO. SHEET NO. 06 06 0F 21





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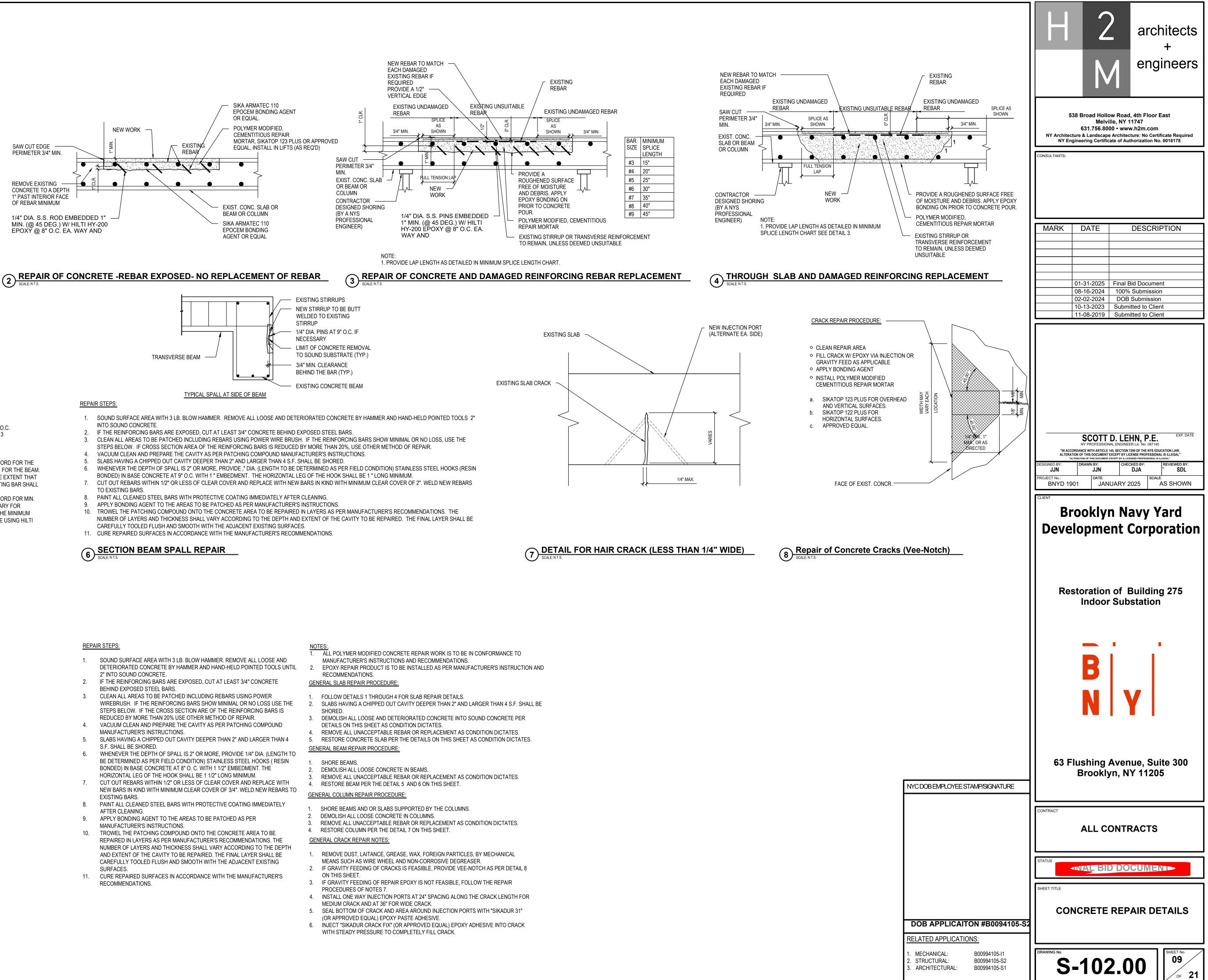


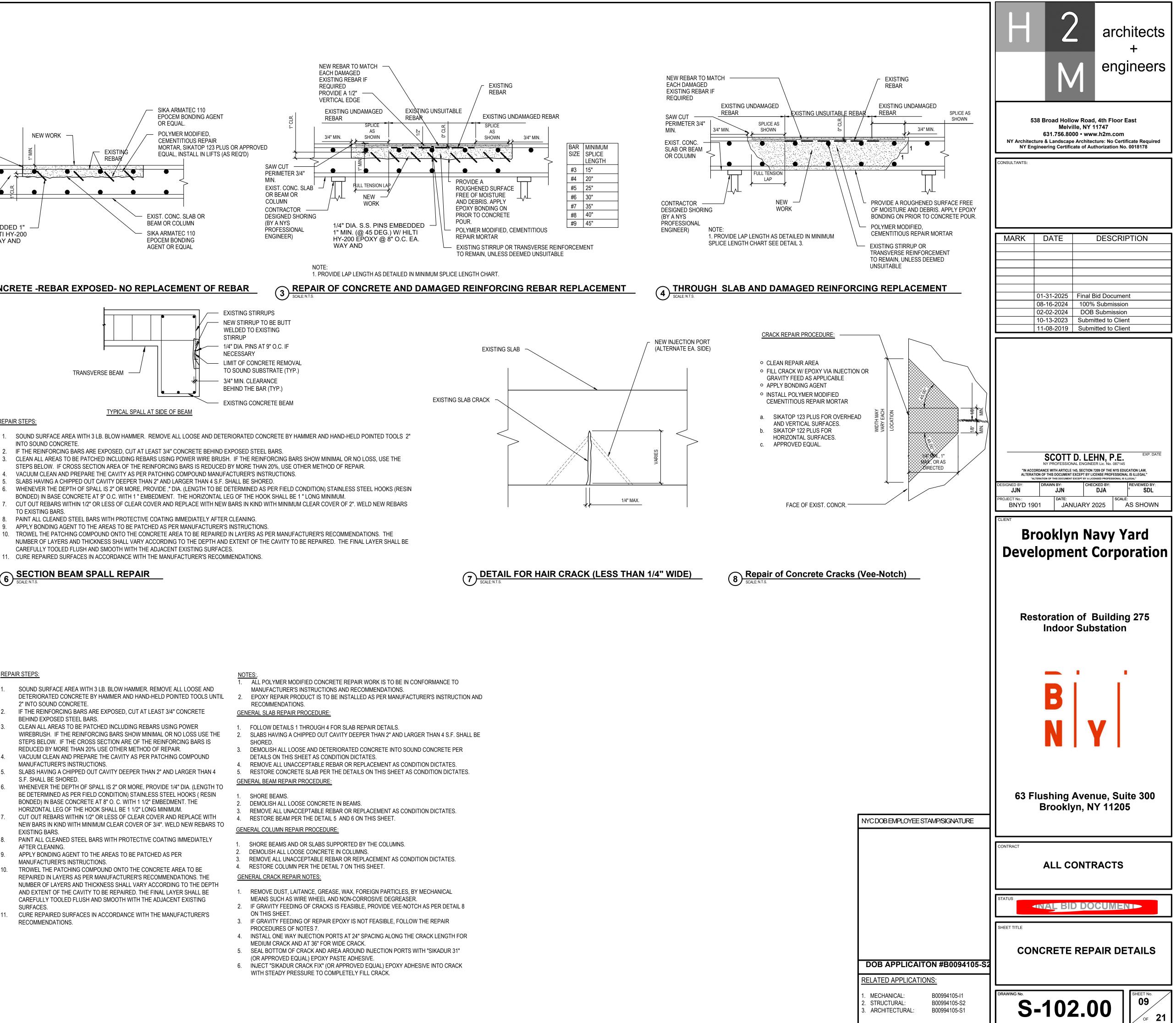


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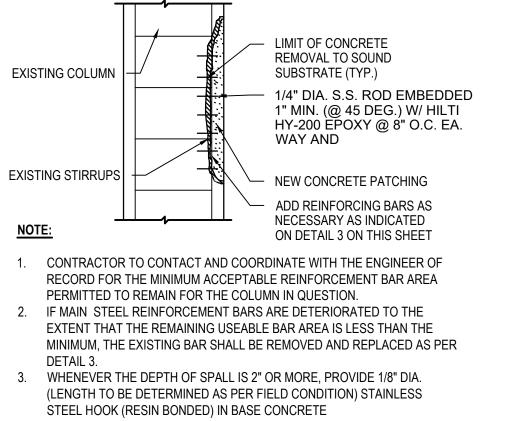
- 1. CONTRACTOR TO CONTACT AND COORDINATE WITH THE ENGINEER OF RECORD FOR THE MINIMUM ACCEPTABLE REINFORCEMENT BAR AREA PERMITTED TO REMAIN FOR THE BEAM 2. IF MAIN TENSILE STEEL REINFORCEMENT BARS ARE DETERIORATED TO THE EXTENT THAT THE REMAINING USEABLE BAR AREA IS LESS THAN THE MINIMUM, THE EXISTING BAR SHALL
- BE REMOVED AND REPLACED AS PER DETAIL 3. 3. CONTRACTOR TO CONTACT AND COORDINATE WITH THE ENGINEER OF RECORD FOR MIN. STIRRUP REQUIREMENTS FOR THE BEAM. #3 BENT BARS ARE NOT NECESSARY FOR INSTALLATION IN THE EVENT THAT THE EXISTING STEEL STIRRUPS MEETS THE MINIMUM REQUIREMENTS. EMBED NEW HOOK BARS 4" MIN. INTO EXISTING CONCRETE USING HILTI HIT HY 200 ADHESIVE OR EQUAL, WHERE INSTALLATION IS REQUIRED.











AT 9" O.C. WITH 2" EMBEDMENT. THE HORIZONTAL LEG OF THE HOOK SHALL BE 2" LONG MINIMUM.

9 TYPICAL SPALL AT SIDE OF COLUMN SCALE: N.T.S.

DSE AND TOOLS UNTIL RETE	 <u>NOTES:</u> ALL POLYMER MODIFIED CONCRETE REPAIR WORK IS TO BE IN CONFORMANCE TO MANUFACTURER'S INSTRUCTIONS AND RECOMMENDATIONS. EPOXY REPAIR PRODUCT IS TO BE INSTALLED AS PER MANUFACTURER'S INSTRUCTION AND RECOMMENDATIONS. <u>GENERAL SLAB REPAIR PROCEDURE:</u>
ER S USE THE BARS IS POUND R THAN 4 (LENGTH TO S (RESIN IE ACE WITH REBARS TO	 FOLLOW DETAILS 1 THROUGH 4 FOR SLAB REPAIR DETAILS. SLABS HAVING A CHIPPED OUT CAVITY DEEPER THAN 2" AND LARGER THAN 4 S.F. SHALL BE SHORED. DEMOLISH ALL LOOSE AND DETERIORATED CONCRETE INTO SOUND CONCRETE PER DETAILS ON THIS SHEET AS CONDITION DICTATES. REMOVE ALL UNACCEPTABLE REBAR OR REPLACEMENT AS CONDITION DICTATES. RESTORE CONCRETE SLAB PER THE DETAILS ON THIS SHEET AS CONDITION DICTATES. SHORE BEAMS. DEMOLISH ALL LOOSE CONCRETE IN BEAMS. REMOVE ALL UNACCEPTABLE REBAR OR REPLACEMENT AS CONDITION DICTATES. REMOVE ALL LOOSE CONCRETE IN BEAMS. REMOVE ALL UNACCEPTABLE REBAR OR REPLACEMENT AS CONDITION DICTATES. GENERAL BEAM PER THE DETAIL 5 AND 6 ON THIS SHEET. GENERAL COLUMN REPAIR PROCEDURE:
DIATELY D BE S. THE HE DEPTH ALL BE STING JRER'S	 SHORE BEAMS AND OR SLABS SUPPORTED BY THE COLUMNS. DEMOLISH ALL LOOSE CONCRETE IN COLUMNS. REMOVE ALL UNACCEPTABLE REBAR OR REPLACEMENT AS CONDITION DICTATES. RESTORE COLUMN PER THE DETAIL 7 ON THIS SHEET. <u>GENERAL CRACK REPAIR NOTES:</u>
	 REMOVE DUST, LAITANCE, GREASE, WAX, FOREIGN PARTICLES, BY MECHANICAL MEANS SUCH AS WIRE WHEEL AND NON-CORROSIVE DEGREASER. IF GRAVITY FEEDING OF CRACKS IS FEASIBLE, PROVIDE VEE-NOTCH AS PER DETAIL 8 ON THIS SHEET. IF GRAVITY FEEDING OF REPAIR EPOXY IS NOT FEASIBLE, FOLLOW THE REPAIR PROCEDURES OF NOTES 7. INSTALL ONE WAY INJECTION PORTS AT 24" SPACING ALONG THE CRACK LENGTH FOR MEDIUM CRACK AND AT 36" FOR WIDE CRACK. SEAL BOTTOM OF CRACK AND AREA AROUND INJECTION PORTS WITH "SIKADUR 31" (OR APPROVED EQUAL) EPOXY PASTE ADHESIVE. INJECT "SIKADUR CRACK FIX" (OR APPROVED EQUAL) EPOXY ADHESIVE INTO CRACK WITH STEADY PRESSURE TO COMPLETELY FILL CRACK.

SPECIAL INSPECTION REQUIREN	IENTS	
SPECIAL INSPECTION CATEGORIES		
 STRUCTURAL STEEL - WELDING STRUCTURAL STEEL - DETAILS STRUCTURAL STEEL - HIGH STRENGTH BOLTING STRUCTURAL COLD - FORMED STEEL CONCRETE - CAST-IN-PLACE CONCRETE - PRECAST CONCRETE - PRESTRESSED POST INSTALLED ANCHORS MASONRY WOOD - INSTALLATION OF HIGH-LOAD DIAPHRAGMS WOOD - INSTALLATION OF METAL-PLATE-CONNECTED TRUSSE WOOD - INSTALLATION OF PREFABRICATED I-JOISTS SUBGRADE INSPECTION SUBSURFACE CONDITIONS - FILL PLACEMENT AND IN-PLACE D 		BC 1704.3.1 BC 1704.3.2 BC 1704.3.3 BC 1704.3.4 BC 1704.4 BC 1704.4 BC 1704.4 BC 1704.4 BC 1704.4 BC 1704.5 BC 1704.6.1 BC 1704.6.2 BC 1704.6.3 BC 1704.7.1 BC 1704.7.2
SUBSURFACE INVESTIGATIONS (BORINGS/TEST PITS) DEEP FOUNDATION ELEMENTS HELICAL PILES (BB # 2014-020) VERTICAL MASONRY FOUNDATION ELEMENTS WALL PANELS, CURTAIN WALLS, AND VENEERS SPRAYED FIRE-RESISTANT MATERIALS MASTIC AND INTUMESCENT FIRE-RESISTANT COATINGS EXTERIOR INSULATION AND FINISH SYSTEM (EIFS) ALTERNATIVE MATERIALS - OTCR BUILDINGS BULLETIN # SMOKE CONTROL SYSTEMS MECHANICAL SYSTEMS HIGH-PRESSURE STEAM PIPING (WELDING) HIGH-PRESSURE STEAM PIPING (WELDING) HIGH-PRESSURE FUEL-GAS PIPING (WELDING) STRUCTURAL STABILITY - EXISTING BUILDINGS EXCAVATIONS - SHEETING, SHORING, AND BRACING UNDERPINNING MECHANICAL DEMOLITION RAISING AND MOVING OF A BUILDING SOIL PERCOLATION TEST - PRIVATE ON-SITE STORM WATER DRAINAGE DISPOSAL SYSTEMS, AND DETENTION FACILITIES	TR4 TR5 TR5H	BC 1704.7.3 BC 1704.7.4 BC 1704.8 BC 1704.8 BC 1704.8 BC 1704.8 BC 1704.9 BC 1704.10 BC 1704.11 BC 1704.12 BC 1704.13 BC 1704.13 BC 1704.14 BC 1704.15 BC 1704.16 BC 1704.17 BC 1704.18 BC 1704.18 BC 1704.20.1 BC 1704.20.1 BC 1704.20.3 BC 1704.20.3 BC 1704.20.3 BC 1704.20.4 BC 1704.20.5 BC 1704.21.1.2
 DRAINAGE DISPOSAL SYSTEMS, AND DETENTION FACILITIES PRIVATE ON-SITE STORM WATER DRAINAGE DISPOSAL SYSTEMS, AND DETENTION FACILITIES INSTALLATION INDIVIDUAL ON-SITE PRIVATE SEWAGE DISPOSAL SYSTEMS INS SOIL PERCOLATION TEST - INDIVIDUAL ON-SITE PRIVATE SEWA SPRINKLER SYSTEMS STANDPIPE SYSTEMS HEATING SYSTEMS CHIMNEYS FIRE-RESISTANT PENETRATIONS AND JOINTS ALUMINUM WELDING FLOOD ZONE COMPLIANCE (ATTACH FEMA ELEVATION/DRY FLICERTIFICATE WHERE APPLICABLE) LUMINOUS EGRESS PATH MARKINGS 	AGE DISPOSAL SYSTEMS	BC 1704.21.2 BC 1704.22 BC 1704.22 BC 1704.23 BC 1704.24 BC 1704.25 BC 1704.26 BC 1704.27 BC 1704.28 BC 1704.29 BC 1704.29 BC 1704.30 BC 1704.31
POST-INSTALLED ANCHORS (BB# 2014-018, 2014-019)	TR3 TR2	BC 1704.32 BC 1707.8 BC 1905.3 BC 1913.5 BC 1905.6 BC 1913.10 BC G105.3
		BC G105.3
PROGRESS INSPECTION CATEGORIES PRELIMINARY FOOTING AND FOUNDATION LOWEST FLOOR ELEVATION STRUCTURAL WOOD FRAME ENERGY CODE COMPLIANCE INSPECTIONS FIRE-RESISTANT RATED CONSTRUCTION FUBLIC ASSEMBLY EMERGENCY LIGHTING FINAL	TR8	28-116.2.1 BC 110.2 BC 110.3.1 BC 110.3.2 BC 110.3.3 BC 110.3.5 BC 110.3.4 28-116.2.2 28-116.2.4.2 BC 110.5
ENERGY CODE PROGRESS INSPECTION	DIRECTIVE 14 OF	1975, AND 1RCNY 101-10
PROTECTION OF EXPOSED FOUNDATION INSULATION INSULATION PLACEMENT AND R VALUES FENESTRATION AND DOOR U-FACTOR AND PRODUCT RATING FENESTRATION AIR LEAKAGE FENESTRATION AREAS AIR BARRIER - VISUAL INSPECTION AIR BARRIER - TESTING AIR BARRIER CONTINUITY PLAN TESTING/INSPECTION VESTIBULES FIREPLACES SHUTOFF DAMPERS HVAC AND SERVICE WATER HEATING EQUIPMENT HVAC AND SERVICE WATER HEATING SYSTEM CONTROLS		(IA1), (IIA1) (IA2), (IIA2) (IA3), (IIA3) (IA4), (IIA4) (IA5), (IIA5) (IA6), (IIA6) (IA7), (IIA7) (IIA8) (IIA9) (IB1), (IIB1) (IB2), (IIB2) (IB3), (IIB3) (IB4), (IIB4)
 HVAC AND SERVICE WATER HEATING SYSTEM CONTROLS HVAC INSULATION AND SEALING DUCT LEAKAGE TESTING, INSULATION AND DESIGN ELECTRICAL ENERGY CONSUMPTION LIGHTING IN DWELLING UNITS INTERIOR LIGHTING POWER EXTERIOR LIGHTING POWER LIGHTING CONTROLS ELECTRICAL MOTORS AND ELEVATORS MAINTENANCE INFORMATION PERMANENT CERTIFICATE SOLAR READY REQUIREMENTS 		(IB4), (IIB4) (IB5), (IIB5) (IB6), (IIB6) (IC1), (IIC1) (IIC2) (IC2), (IIC3) (IIC4) (IIC5) (IIC6) (ID1), (IID1) (ID2) (ID3)

SCOPE OF WORK:

- 1. REMOVAL OF EXISTING LOW PRESSURE STEAM BOILER, GAS FIRED BURNER AND ASSOCIATED PIPING.
- REMOVAL OF EXISTING, DUPLEX BOILER FEED TANK AND 55 GAL. CHEMICAL 2. TREATMENT TANK.
- 3. INSTALLATION OF NEW LOW PRESSURE STEAM BOILER, BOILER FEED TANK, AND ASSOCIATED PIPING, ON RAISED STEEL PLATFORM.

SPECIAL INSPECTIONS:

SPECIAL INSPECTIONS REQUIRED IN ACCORDANCE WITH CHAPTER 17 AND THE APPLICABLE SECTION OF THE NYC CONSTRUCTION CODE ARE LISTED IN THE FOLLOWING TABLES.

THE CONTRACTOR MUST NOTIFY THE ARCHITECT OR ENGINEER FOR SPECIAL INSPECTIONS AT LEAST 72 HOURS BEFORE THE SPECIFIC WORK COMMENCES.

IN ACCORDANCE WITH SECTION BC 109.9, THE CONSTRUCTION SHALL BE CORRECTED WHERE AN INSPECTION OR TEST FAILS.

IN ACCORDANCE WITH ARTICLE 116 OF TITLE 28 AND SECTION BC 109, CONSTRUCTION SHALL BE SCHEDULED SUCH THAT REQUIRED CONSTRUCTION NOT BE COVERED OR ENCLOSED UNTIL THE REQUIRED PROGRESS INSPECTIONS ARE COMPLETED OR THE PROGRESS INSPECTOR INDICATES THAT SUCH COVERING OR ENCLOSURE MAY PROCEED AT EACH STAGE OF CONSTRUCTION, AS APPLICABLE.

THE OWNER SHALL BE RESPONSIBLE FOR THE FOLLOWING SPECIAL INSPECTIONS

NOTES:

1. ENERGY ANALYSIS OF CONSTRUCTED CONDITIONS SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 28-104.3 OF THE ADMINISTRATIVE CODE. IF CONSTRUCTED WORK DIFFERS FROM THE LAST-APPROVED FULL ENERGY ANALYSIS, AN AS-BUILT ENERGY ANALYSIS SHALL BE SUBMITTED AS A POST-APPROVAL AMENDMENT, LISTING THE ACTUAL VALUES USED IN THE BUILDING FOR ANN APPLICABLE ENERGY CODE-REGULATED ITEMS DEMONSTRATING THAT THE BUILDING COMPLIES WITH THE ENERGY CODE. SUCH ENERGY ANALYSIS SHALL BE SIGNED BY A REGISTERED DESIGN PROFESSIONAL, WHO SHALL CERTIFY THAT TO THE BEST OF HIS OR HER KNOWLEDGE AND BELIEF THE BUILDING BUILT COMPLIES WITH THE ENERGY CODE; WHERE NO TRADE-OFFS HAVE BEEN USED AMONG DISCIPLINES. MORE THAN ONE REGISTERED DESIGN PROFESSIONAL MAY SIGN AND SEAL THE ENERGY ANALYSIS; THE ENERGY ANALYSIS SHALL BE APPROVED BY THE DEPARTMENT PRIOR TO SIGN-OFF OR ISSUANCE OF THE CERTIFICATE OF OCCUPANCY.

SYSTEM COMMISSIONING NOTES:

- COMMISSION ALL NEW BUILDING MECHANICAL SYSTEMS IN ACCORDANCE WITH 1. THE REQUIREMENTS OF THE 2020 NEW YORK CITY ENERGY CONSERVATION CODE (ECC) SECTION C408. COMMISSIONING SHALL BE PERFORMED BY AN APPROVED THIRD PARTY COMMISSIONING AGENCY HIRED BY THE NEW YORK CITY HOUSING AUTHORITY OR THE ASSIGNED CONSTRUCTION MANAGER. REFER TO SPECIFICATION SECTIONS 019113 - GENERAL COMMISSIONING REQUIREMENTS AND 230800 - COMMISSIONING OF MECHANICAL SYSTEMS FOR MORE INFORMATION.
- PROVIDE DRAWINGS, OPERATION & MAINTENANCE (O&M) MANUALS, AND SYSTEM BALANCING REPORTS TO BUILDING OWNER OR OWNER'S AUTHORIZED AGENT WITHIN 90 DAYS OF THE DATE OF RECEIPT OF THE CERTIFICATE OF OCCUPANCY OR LETTER OF COMPLETION IN ACCORDANCE WITH THE 2016 NEW YORK CITY ECC SECTION C408.2.5.
- PROVIDE FINAL COMMISSIONING REPORT TO THE BUILDING OWNER OR 3. OWNER'S AUTHORIZED AGENT IN ACCORDANCE WITH THE REQUIREMENTS OF THE 2016 NYC ECC SECTION C408.2.5.4.

NYCECC CODE:

"TO THE BEST OF MY KNOWLEDGE, BELIEF AND PROFESSIONAL JUDGMENT, THESE PLANS AND SPECIFICATIONS ARE IN COMPLIANCE WITH THE NEW YORK CITY ENERGY CONSERVATION CONSTRUCTION CODE" - 2020 CHAPTER C4

2020 NYCECC TABLILAD ANALYSIS (COMMEDCIAL HVAC)

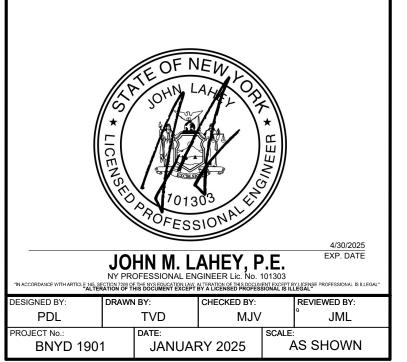
2020 NYCECC TABULAR ANALYSIS (COMMERCIAL HVAC)									
NYSECC CITATION	PROVISION	ITEM DESCRIPTION	ESCRIPTION PROPOSED DESIGN VALUE (ECC)		SUPPORTING DOCUMENTATION				
C403.1.1	Calculation of heating and cooling loads (mandatory)	Load calculations for HVAC systems	Design loads are determined in accordance with the procedures described in the ANSI/ASHRAE/ACCA Standard183.	Determined in accordance with ANSI/ASHRAE/ACCA Standard 183 HVAC Systems and Equipment Handbook	Carrier HAP load calculations and ASHRAE 183 procedural compliance certificate				
C403.3.1	Equipment sizing.	HVAC systems sizing based on load calculations	Specified equipment sized within load calculation limits	Heating and cooling equipment shall not exceed calculated loads	Signed and sealed statement from Engineer certifying compliance with Energy Code, see H0.0				
C403.2.4.1	Thermostatic controls.	Thermostats/humidistats for mechanical zones	One thermostat is provided for each zone	Minimum one thermostat/humidistat required per zone	Thermostats shown on sheets M-100.00				

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architects
+
engineers

	538 Broad Hollow Road, 4th Floor East
	Melville, NY 11747
	631.756.8000 • www.h2m.com
יא	Y Architecture & Landscape Architecture: No Certificate Required NY Engineering Certificate of Authorization No. 0018178
CONSU	LTANTS:

MARK	DATE	DESCRIPTION
	01-31-2025	Final Bid Document
	08-16-2024	100% Submission
	02-02-2024	DOB Submission
	10-13-2023	Submitted to Client
	11-08-2019	Submitted to Client



Brooklyn Navy Yard Development Corporation

Restoration of Building 275 Indoor Substation



63 Flushing Avenue, Suite 300 Brooklyn, NY 11205

ALL CONTRACTS

FINAL BID DOCUMENT

ENERGY ANALYSIS AND SPECIAL INSPECTIONS

DRAWING NO. SHEET NO. 10 OF 21

APPLICATION NUMBER: B00933910-S2 **RELATED APPLICATIONS:** MECHANICAL:

NYC DOB EMPLOYEE STAMP/SIGNATURE

B00994105-I1 B00994105-S2 B00994105-S1 2. STRUCTURAL: 3. ARCHITECTURAL:

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AFF	ABOVE FINISHED FLOOR
BCU	BUILDING CONTROL UNIT
BTU	BRITISH THERMAL UNIT
CFH	CUBIC FEET PER HOUR
CFM	CUBIC FEET PER MINUTE
CLG	CEILING
COMM.	COMMUNICATION
CV	CONTROL VALVE
(D)	DEMOLISH
DB	DRY BULB
DCV	DEMAND CONTROLLED VENTILATION
DEG. F	DEGREES FAHRENHEIT
DIA	DIAMETER
DX	
'E'	
(E)	EXISTING
EA	
EAT	
EER	ENERGY EFFICIENCY RATING
ESP	
FAI FD	FRESH AIR INTAKE
FD	FLOOR DRAIN FULL LOAD AMPS
FLA FT. H20	FEET OF WATER
'G'	GENERAL CONSTRUCTION CONTRACTOR
GPM	GALLONS PER MINUTE
GPH	GALLONS PER HOUR
H	HEIGHT
	HVAC CONTRACTOR
HP	HORSEPOWER
IN.	INCHES
IN. W.C. (W.G.)	INCHES WATER COLUMN (WATER GAUGE)
KW	KILOWATTS
L	LENGTH
LAT	LEAVING AIR TEMPERATURE
LBS	POUNDS
LCD	LIQUID CRYSTAL DISPLAY
LDB	LEAVING DRY BULB TEMPERATURE
LWB	LEAVING WET BULB TEMPERATURE
LWT	LEAVING WATER TEMPERATURE
М	METER
MAX	MAXIMUM
MBH	1,000 BTU PER HOUR
MCA	
MIN	MINIMUM
MNF	
N.C.	
N.O.	NORMALLY OPEN NATIONAL FIRE PROTECTION ASSOCIATION
NFPA NPT	NATIONAL FIRE PROTECTION ASSOCIATION
NPT	NOT TO SCALE
OAI	OUTDOOR AIR INTAKE
OED	OPEN ENDED DUCT
'P'	PLUMBING CONTRACTOR
PD	PRESSURE DROP
PSIG	LBS / SQUARE INCH (GAUGE PRESSURE)
RD	ROOF DRAIN
RPM	REVOLUTIONS PER MINUTE
RPZ	REDUCED PRESSURE ZONE
SAT	SUPPLY AIR TEMPERATURE
SEER	SEASONAL ENERGY EFFICIENCY RATING
TEMP	TEMPERATURE
TG	TRANSFER GRILLE
ТҮР	TYPICAL
VFD	VARIABLE FREQUENCY DRIVE
w	WIDTH
WB WMS	WET BULB

DUCTWORK LEGEND			PIPING LEGEND		
SYMBOL	ABBREV	DESCRIPTION	SYMBOL	ABBREV	DESCRIPTION
					NEW WORK
		DUCTWORK BRANCH CONNECTION	C O		PIPING DOWN/ PIPING UP
	VD	VOLUME DAMPER			BALL VALVE WITH HOSE END CONNECTION
	CD	ROUND FACE SUPPLY DIFFUSER	Q	тн	THERMOMETER
	SEE AIR DEVICE	SIDEWALL SUPPLY, RETURN OR EXHAUST GRILLE/REGISTER	—	U	UNION
	SCHEDULE SEE AIR			FPC	FLEXIBLE PIPE CONNECTION
, X	DEVICE SCHEDULE	SQUARE FACE SUPPLY DIFFUSER	>		DIRECTION OF FLOW
	SEE AIR DEVICE SCHEDULE	BOTTOM RETURN OR EXHAUST GRILLE/REGISTER		PSR	PRESSURE SAFETY AND RELIEF VALVE
	FC	FLEXIBLE CONNECTION		PRV	PRESSURE REDUCING VALVE
				BV	BALL VALVE
		TURNING VANES		ВА	BALANCING VALVE
		RECTANGULAR TO ROUND TRANSITION	<u>ſ</u>	BFV	BUTTERFLY VALVE
	AL	ACOUSTICAL LINING	¶		TEMPERATURE SENSOR WITH THERMOWELL
				GA	GATE VALVE
		END CAP	_₩₩_	GB	GLOBE VALVE
	SEE AIR DEVICE SCHEDULE	SUPPLY DIFFUSER WITH DIRECTIONAL FLOW (SOLID HATCH INDICATES BLANK OFF PANEL)	<u> </u>	AV	AUTOMATIC AIR VENT
		SUPPLY DUCT DROP (TURN DOWN)		cv	2-WAY ELECTRONIC CONTROL VALVE
		RETURN/EXHAUST DUCT DROP (TURN DOWN)		cv	3-WAY ELECTRONIC CONTROL VALVE
				CV	2-WAY PNEUMATIC CONTROL VALVE
		SUPPLY DUCT RISE		CV	3-WAY PNEUMATIC CONTROL VALVE
		RETURN/EXHAUST DUCT RISE		STR FD	STRAINER WITH BLOW OFF VALVE WITH HOSE END CONNECTION
DSD 🗖	DSD	DUCT SMOKE DETECTOR	● , j´ s	FD	FLOOR DRAIN AIR SEPARATOR
M	MD	MOTORIZED DAMPER WITH ACTUATOR			STEAM TRAPS (INDICATE TYPE)
				СН	CHECK VALVE
	AD	ACCESS DOOR	Q	PG	PRESSURE GAUGE WITH GAUGE COCK
	FD/AD	FIRE DAMPER WITH ACCESS DOOR		RED	REDUCER
	FSD/AD	FIRE SMOKE DAMPER WITH ACCESS DOOR	ı⊢	со	CLEANOUT END CAP
		FAN			PIPE GUIDE
		WORK TO BE REMOVED	X		PIPE ANCHOR
					CAPPED PIPE
		POINT OF DISCONNECTION FROM EXISTING			PUMP
•		POINT OF CONNECTION TO EXISTING	·/////		WORK TO BE REMOVED
CONTROLS LEGEND					POINT OF DISCONNECTION FROM EXISTING
SYMBOL	ABBREV	DESCRIPTION			POINT OF CONNECTION TO EXISTING
T		THERMOSTAT	<u>+</u> ~ +	TDV	TRIPLE DUTY VALVE

Sheet L	ist Table
Sheet Number	Sheet Title
EN-100.00	ENERGY ANALYSIS AND SPECIAL INSPECTIONS
M-000.00	HVAC GENERAL NOTES, LEGENDS, SYMBOLS, AND ABBREVIATIONS
M-100.00	HVAC FLOORPLANS, SCHEDULES, AND DETAILS

2. THE CONTRACTOR, BY PRESENTING THEIR BID FOR THE WORK, REPRESENTS THAT HE/SHE HAS INSPECTED THE SITE AND IS COMPLETELY FAMILIAR WITH THE SCOPE OF WORK AND ALL FIELD CONDITIONS RELATED TO, AND AFFECTING THE WORK AND ITS PERFORMANCE. EXCEPTIONS AFFECTING THE WORK AND ITS PERFORMANCE, OR CONFLICTS BETWEEN FIELD CONDITIONS, SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT PRIOR TO THE SUBMISSION OF BIDS.

3. PERFORM ALL WORK IN ACCORDANCE WITH THE PLUMBING CODE, FIRE CODE, MECHANICAL CODE, ENERGY CONSERVATION CONSTRUCTION CODE, AND FUEL GAS CODE OF NEW YORK STATE AND THE REQUIREMENTS OF THE LOCAL AUTHORITIES HAVING JURISDICTION.

4. COMPLY WITH THE NYC ELECTRIC CODE AND THE REQUIREMENTS OF DIVISION 26 FOR ALL ELECTRICAL INSTALLATIONS. 5. FIRE STOP ALL OPENINGS IN FIRE RATED CONSTRUCTION FOR PIPING, DUCTWORK, CONDUIT, ETC. PROVIDE FIRE

6. DO NOT SCALE DRAWINGS. DRAWINGS FOR HVAC WORK ARE DIAGRAMMATIC AND ARE INTENDED TO CONVEY SCOPE AND GENERAL ARRANGEMENT ONLY. THE LOCATIONS OF ALL ITEMS SHOWN ON THE DRAWINGS OR CALLED FOR IN THE SPECIFICATIONS THAT ARE NOT DEFINITELY FIXED BY DIMENSIONS ARE APPROXIMATE. COORDINATE CONTRACT DOCUMENTS, PROJECT REQUIREMENTS, WORK OF OTHERS, AND EQUIPMENT AND MATERIALS PURCHASED WITH FIELD DIMENSIONS. INSTALL ALL EQUIPMENT AS PER MANUFACTURER'S REQUIREMENTS TO PROVIDE PROPER CLEARANCE FOR INSTALLATION, OPERATION, AND MAINTENANCE. CONTRACTOR'S INTENDED MEANS AND METHODS OF INSTALLATION AND CONTRACTOR'S FABRICATED ITEMS SHALL ENSURE A PROPER "FIT" AND INSTALLATION. BRING ANY CONFLICTS TO THE ATTENTION OF THE ARCHITECT/ENGINEER DURING THE SUBMITTAL PHASE FOR RESOLUTION PRIOR TO PURCHASING ANY

EQUIPMENT.

7. MAINTAIN MAXIMUM HEADROOM AND SPACE CONDITIONS AT ALL POINTS. WHERE HEADROOM AND SPACE CONDITIONS APPEAR INADEQUATE, NOTIFY THE ARCHITECT/ENGINEER PRIOR TO PROCEEDING WITH INSTALLATION. MAINTAIN A MINIMUM OF 6'-8" CLEARANCE FROM FINISHED FLOOR TO UNDERSIDE OF PIPES, DUCTS, CONDUITS, SUSPENDED EQUIPMENT, ETC., THROUGHOUT ACCESS ROUTES IN MECHANICAL ROOMS.

10. INSTALL ALL EQUIPMENT AND APPURTENANCES IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS, CONTRACT DOCUMENTS, AND APPLICABLE CODES AND REGULATIONS. REFER TO DETAILS FOR ADDITIONAL PIPING AND EQUIPMENT INSTALLATION REQUIREMENTS.

11. COORDINATE ALL EQUIPMENT CONNECTIONS WITH MANUFACTURER'S CERTIFIED DRAWINGS. COORDINATE AND PROVIDE ALL PIPING AND DUCT TRANSITIONS REQUIRED FOR FINAL CONNECTIONS TO EQUIPMENT.

12. COORDINATE LOCATIONS AND SIZES OF ALL FLOOR, WALL, AND ROOF OPENINGS WITH ALL OTHER TRADES. COORDINATE ALL PIPING AND EQUIPMENT SUPPORTED FROM STRUCTURE WITH GENERAL CONSTRUCTION WORK.

13. TESTING, ADJUSTING, AND BALANCING AGENCY SHALL BE A MEMBER OF THE ASSOCIATED AIR BALANCE COUNCIL (AABC) OR THE NATIONAL ENVIRONMENTAL BALANCING BUREAU (NEBB). PERFORM ALL TESTING, ADJUSTING, AND BALANCING IN ACCORDANCE WITH THE SPECIFICATIONS.

14. FURNISH AND INSTALL ALL NECESSARY CONTROL WIRING, CONDUIT, AND ACCESSORIES AS REQUIRED TO PROVIDE FULLY FUNCTIONING SYSTEMS AND SEQUENCES OF OPERATION.

1. EXISTING CONDITIONS, INCLUDING EQUIPMENT, DUCT AND PIPE SIZES AND LOCATIONS, INDICATED ON THE DRAWINGS ARE DIAGRAMMATIC. CONFIRM ALL EXISTING CONDITIONS PRIOR TO PROCEEDING WITH THE WORK.

GENERAL NOTES

1. PROVIDE ALL MATERIALS AND EQUIPMENT AND PERFORM ALL LABOR REQUIRED TO INSTALL COMPLETE AND OPERABLE MECHANICAL SYSTEMS AS INDICATED ON THE DRAWINGS, AS SPECIFIED AND AS REQUIRED BY CODE.

DAMPERS AND ACCESS DOORS IN ALL OPENINGS IN FIRE RATED FLOORS, PARTITIONS, AND WALLS FOR DUCTWORK AS PER THE MECHANICAL CODE OF NEW YORK STATE. (SEE ARCHITECTURAL DRAWINGS FOR LOCATIONS OF FIRE RATED CONSTRUCTION.)

8. FIELD VERIFY AND COORDINATE ALL DUCT AND PIPING DIMENSIONS BEFORE FABRICATION. MAKE MODIFICATIONS IN THE LAYOUT AS NEEDED TO PREVENT CONFLICT WITH WORK OF OTHER TRADES OR FOR PROPER EXECUTION OF THE WORK. OBTAIN THE APPROVAL OF THE ARCHITECT/ENGINEER FOR MODIFICATIONS.

9. PROVIDE PRODUCTS OF ONE MANUFACTURER WHERE TWO OR MORE ITEMS OF THE SAME TYPE OF MATERIAL OR EQUIPMENT IS REQUIRED.

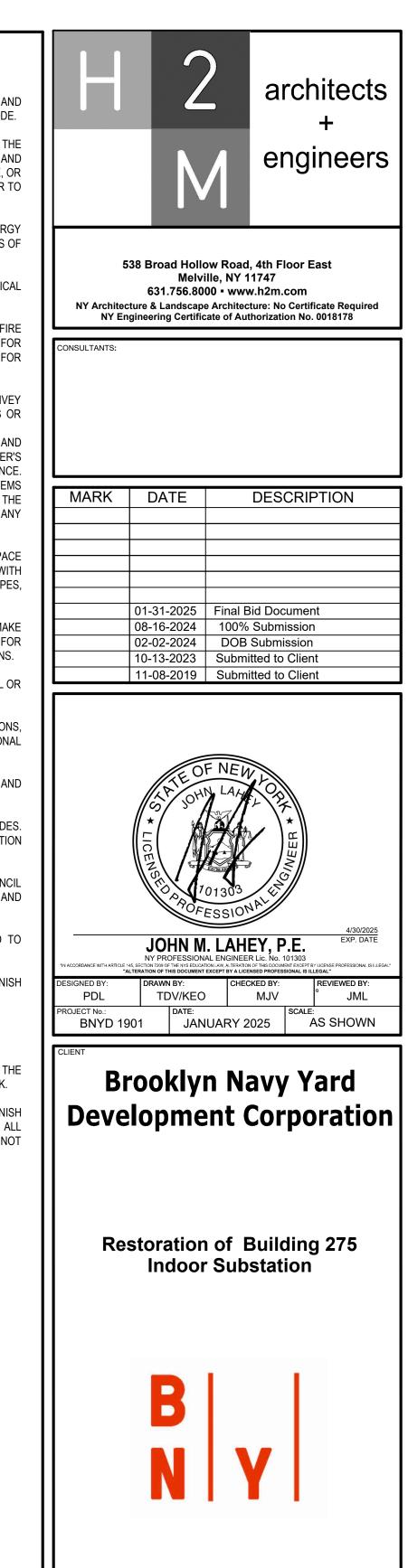
15. PERFORM ALL CUTTING AND ROUGH PATCHING AS REQUIRED IN THE EXECUTION OF THE WORK. FINISH PATCHING AND FLASHING IS PART OF THIS CONTRACT.

WORK IN EXISTING AREAS

2. CUT AND ROUGH PATCH EXISTING CONSTRUCTION AS REQUIRED FOR THE PERFORMANCE OF THE WORK. FINISH PATCHING AND FLASHING REQUIREMENTS ARE SHOWN ON THE ARCHITECTURAL DRAWINGS. PERFORM ALL CUTTING AND PATCHING WORK IN A MANNER SUCH THAT ANY EXISTING WARRANTEES/GUARANTEES ARE NOT VOIDED. USE QUALIFIED PERSONNEL IN PERFORMANCE OF THE WORK.

LEGENDS/ABBREVIATIONS NOTES

1. ABBREVIATIONS AND SYMBOLS ON THIS SHEET DO NOT DEFINE THE SCOPE OF WORK.



63 Flushing Avenue, Suite 300 Brooklyn, NY 11205

ALL CONTRACTS

FINAL BID DOCUMENT

HVAC GENERAL NOTES, LEGENDS, SYMBOLS, AND ABBREVIATIONS

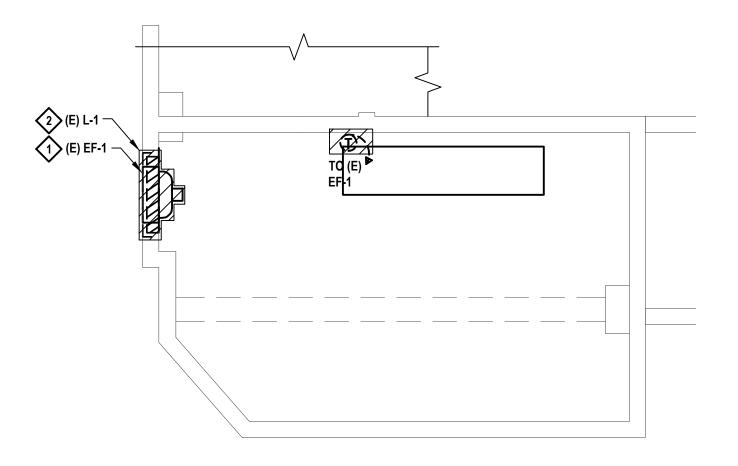
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- 21

DOB APPLICAITON #B0094105-I1 **RELATED APPLICATIONS:**

NYC DOB EMPLOYEE STAMP/SIGNATURE

B00994105-I1 MECHANICAL: B00994105-S2 2. STRUCTURAL: B00994105-S1 3. ARCHITECTURAL:



HVAC Building 275 First Floor Demolition Work Plan

FANS	b											
				PERFORMANCE/CONSTRUCTION REQUIREMENTS				BASIS OF DESIGN				
EQUIPI NC		ON	SYSTEM SERVED	CFM	EXT S. P. (IN. W.C.)	FAN/MO RPN		BHP	MNF	MODEL NO.	DIME	INAL NSION V. x H)
EF-	1 SWITCH GE/	AR RM. GE	N. EXHAUST	350	.25	1350)	1/16	GREENHECK	AER-20-03-0605-VG	26 X 22	.25 X 26
2. UL/c 3. MO	TOR WITH THERMAL (CUL 507 LISTED TOR WITH CLASS B O		INSULATION			LATORS"	8. 9. 10. 11.		ING D	MPER	12.	LINE VOL
			PERFORM	ANCE/CONSTR		EMENTS		F DESIGN MATION				
equip. No.	LOCATION	SYSTEM SERVED	AIR FLOW RATE (CFM)	FREE AREA (SQ. FT.)	OVERALL NOMINAL SIZE W X H	SERVICE	MNF	MODEL NO	REMAR	KS		
L-1	SWITCH GEAR RM.	EF-1	350	3.05	42 x 27.5	MAKE UP	GREENHECK	EHH-401	1,2			

NOTES: 1. PROVIDE BIRD AND INSECT SCREEN. 2. ALUMINUM CONSTRUCTION

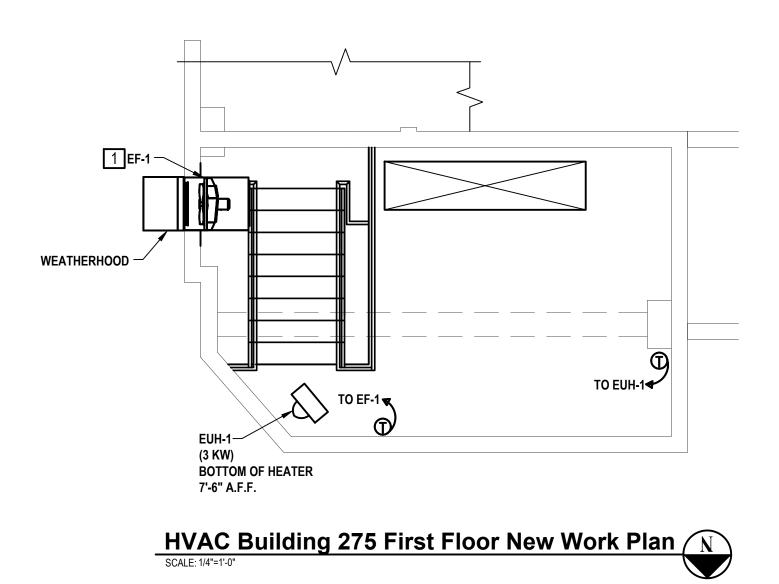
ELECTRIC UNIT HEATERS										
						BASIS OF DESIGN INFORMATION				
EQUIP.		TOTAL	HEATIN DA				NOMINAL	NOMINAL	NOTEO	
NO.	LOCATION	ATION CAPACITY	ELECTRIC DATA		MNF	MNF MODEL NO.			NOTES	
		(MBH)	VOLTS/ PHASE	TOTAL KW			L x W x H	(LBS.)		
EUH-1	SWITCH GEAR ROOM	10.2	208 / 1	3	STELPRO	ASHU0383C24CHAR	15.5"X18.5"X12"	40	1-4	

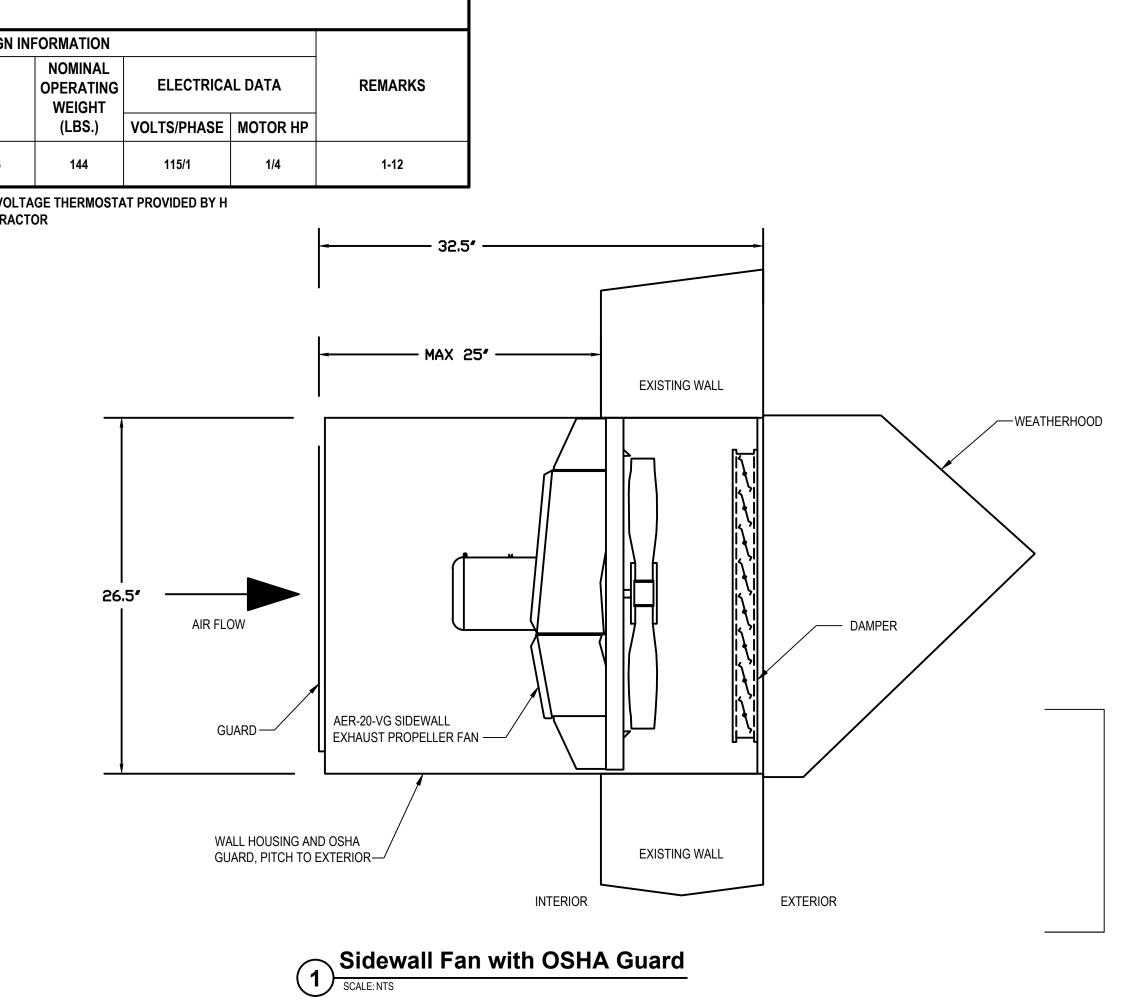
NOTES: 1. LOW VOLTAGE CONTROL TRANSFORMER PROVIDED BY MANUFACTURER. MANUFACTURER.

2. LOW VOLTAGE, 24v, THERMOSTAT. 3. CEILING OR WALL MOUNTED WITH MOUNTING BRACKET PROVIDED

BY MANUFACTURER.

4. FIELD CONVERTIBLE TO SINGLE PHASE POWER.



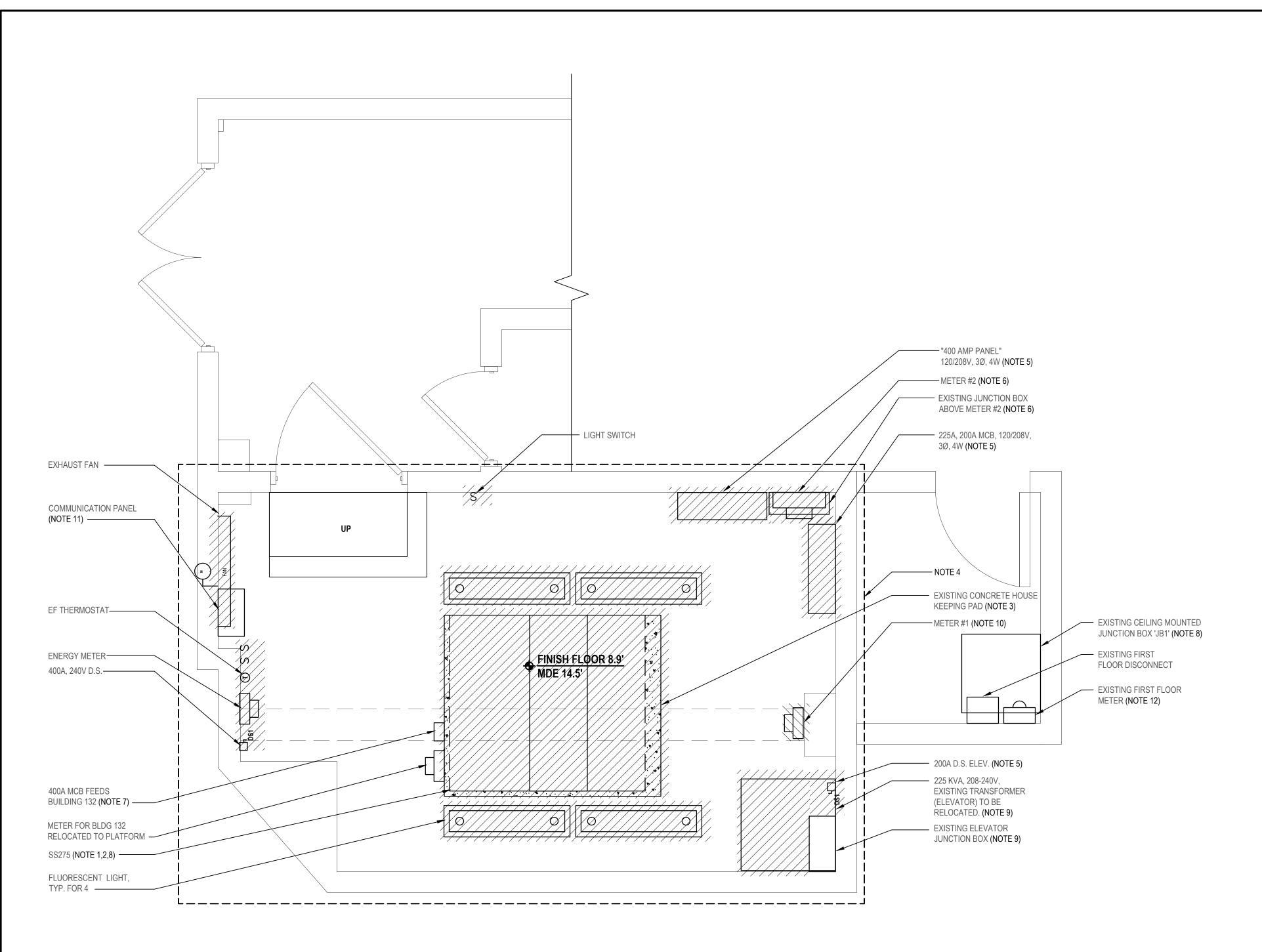


Key SCALE: N

	DEMOLITION	I NOTES:			Ы			chitects
	PROVIDED TH REBUILT TO M	ITION SHALL BE ALLOW AT ALL SURFACES SH/ IATCH MATERIALS, AN	ALL BE D					gineers
	IN CONFORMA	AND AT NO ADDITIONA	RUCTION					
	DEMOLITION	I KEY WORK	NOTES:		53	Melv	ow Road, 4th Floo ille, NY 11747 00 - www.h2m.co	
	EXISTING SIDEWA OPENING TO BE M FAN INSTALLATION	ADE WEATHER-TIGHT			NY Architect NY Eng ISULTANTS:	ture & Landscap	e Architecture: No Ce cate of Authorization	ertificate Required
	WEATHER-TIGHT	COVERED, SEALED AND TO PREVENT DAMAGE INTS, UNTIL NEW LOUV	D MADE FROM					
	CONSTRUCTI	ON KEY WOR	RK NOTES		MARK	DATE	DESCF	RIPTION
	INTEGRAL BACK	STALL SIDEWALL EXHA DRAFT DAMPER, SLEE	VE AND OSHA					
		BE CONTROLLED USII				01-31-2025 08-16-2024 02-02-2024 10-13-2023 11-08-2019	Final Bid Docun 100% Submiss DOB Submiss Submitted to Cl Submitted to Cl	ion on ient
				PRO	GNED BY: PDL JECT No.: BNYD 190 ENT B R	DRAWN BY: TDV/KEC 01 DATE: 01	AL ENGINEER Lie. No. 1013 TEXCEPT BY A LICENSED PROFESSIONA CHECKED BY: MJV JUARY 2025 N Navy	4/30/2025 EXP. DATE 03 CEPT BY LICENSE PROFESSIONAL IS ILLEGAL" IS ILLEGAL" REVIEWED BY: 0 JML ALE: AS SHOWN
					Res		n of Buildin r Substatio	
						B N	Y	
		NYC DOB EMPLOYEE S	TAMP/SIGNATURE		63 F		Avenue, S yn, NY 112	
	- AREA OF WORK			CON	ITRACT	ALL C	ONTRACTS	}
				STA	TUS	INAL BI	D DOCUMI	ENT
BUILDING 275							LOORPLAI S, AND DE	•
		DOB APPLICAITO		$\left\ \right\ $				
y Plan N.T.S.		 MECHANICAL: STRUCTURAL: ARCHITECTURAL: 	B00994105-I1 B00994105-S2 B00994105-S1	DRA	WING No.	100	0.00	SHEET No. 12 of 21

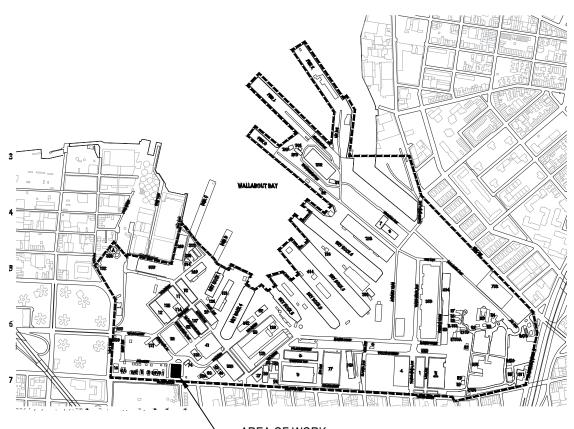
	ELECTRICAL LE	GENDS						SINGLE LINE DIAGRAM LEGEND	
SYMBOL	DESCRIPTION	COMMENTS	ABBREVIATION		DESCRIPTION	COMMENTS	SYMBOL	DESCRIPTION	COMMENTS
	THREE - WAY SWITCH	46" AFF TO CL UON	AFF	ABOVE FINISHED FLOC				LINE VOLTAGE THERMOSTAT, 120V, 10A.	
	FOUR - WAY SWITCH	46" AFF TO CL UON	AFC	ABOVE FINISHED CEILI	NG				
₽ ¹	SINGLE POLE SWITCH; "A" INDICATES SWITCH CONTROL	46" AFF TO CL UON	AFCI	ARC FAULT CIRCUIT IN	TERRUPTER		100AF	CIRCUIT BREAKER WITH TRIP AND POLES AS NOTED; 100 AMP FRAME, 100 AMP TRIP.	
	SINGLE POLE DIMMER SWITCH	46" AFF TO CL UON	AFG	ABOVE FINISHED GRAD			•/ 100AT		
BD	THREE - WAY DIMMER SWITCH	46" AFF TO CL UON	AHJ	AUTHORITY HAVING JU	JRISDICTION				
	SINGLE POLE KEYED SWITCH	46" AFF TO CL UON	AMP, A		R SWITCH; SEE TRANSFER SWITCH		 ' /	TRANSFER SWITCH 'TS1'; SEE TRANSFER SWITCH SCHEDULE.	
► K3 ► K3	KEYED THREE - WAY SWITCH KEYED FOUR - WAY SWITCH	46" AFF TO CL UON 46" AFF TO CL UON	ATS	SCHEDULE	SWITCH, SEE TRANSPER SWITCH		ATS1		
	SWITCH AND PILOT LIGHT		AWG	AMERICAN WIRE GAUG			M.C.B 30A/2P		
	SWITCH WITH THERMAL OVERLOAD PROTECTION (CONTRACTOR SHALL COORDINATE VOLTAGE AND PHASE WITH		BFC	BELOW FINISHED CEILI	ING		PANEL "P1"	DISTRIBUTION PANEL P1 WITH 30A, 2 POLE M.C.B.; SEE DISTRIBUTION PANEL SCHEDULE.	
S _{DS/VS}	EQUIPMENT) OCCUPANCY/VACANCY SENSOR WITH MANUAL OVERRIDE, WALL MOUNT		CL CT	CENTERLINE COUNTER TOP					
	TIME CLOCK		EC	ELECTRICAL CONDUIT				UNFUSED DISCONNECT SWITCH DS1, 100 AMP; SEE DISCONNECT SWITCH SCHEDULE.	
E,G	EMERGENCY SHUT OFF SWITCH; 'E' INDICATES ELECTRICAL; 'G' INDICATES GAS		GFCI	GROUND FAULT CIRCU	JIT INTERRUPTER		•/		
	2 #12 AWG + #12 AWG GND IN 3/4" E.C. CONCEALED IN WALL OR CEILING		GFI	GROUND FAULT INDICA	ATOR		DS1 100AS 100AF	FUSED DISCONNECT SWITCH 'DSI', FUSED AT 100 AMP SIZE, 100 AMP FUSED, 3 POLES; SEE DISCONNECT SWITCH SCHEDULE.	
			GND	GROUND					
	3 #12 AWG + #12 AWG GND IN 3/4" E.C. CONCEALED IN OR BELOW SLAB		MDE	MITIGATION DESIGN EL	LEVATION TRIC AND GAS COMPANY (LOCAL		G	GENERATOR SET 'G'	
LP1-35	DEDICATED HOME RUN TO PANEL LP1 FOR CIRCUIT NO. 35 ONLY. 2 #12 AWG + #12 AWG GND IN 3/4" E.C. CONCEALED IN WALL OR CEILING		PSEG	ELECTRIC UTILITY)	TRICAND GAS COMPANY (LOCAL				
θ-	SIMPLEX RECEPTACLE: 120V, 20A. COORDINATE MOUNTING HEIGHT WITH MECHANICAL CONTRACTOR TO CLEAR BASEBOARDS.	FLUSH	МСВ	MAIN CIRCUIT BREAKE	R		M	ELECTRIC METER AND METER PAN AS PER PSEG REQUIREMENTS.	
├	DUPLEX RECEPTACLE: 120V, 20A. COORDINATE MOUNTING HEIGHT WITH MECHANICAL CONTRACTOR TO CLEAR	FLUSH	MLO	MAIN LUGS ONLY			(5HP)	MOTOR, NUMBER INDICATES HORSEPOWER.	
	BASEBOARDS. QUAD RECEPTACLE, DOUBLE DUPLEX RECEPTACLE: 120V, 20A. COORDINATE MOUNTING HEIGHT WITH MECHANICAL		NTS TYP	NOT TO SCALE TYPICAL					
₽	CONTRACTOR TO CLEAR BASEBOARDS.	FLUSH	UON	UNLESS OTHERWISE N	IOTED		CTS	CURRENT TRANSFORMERS.	
⊖_c	DUPLEX RECEPTACLE: 120V, 20A; SUBSCRIPT "C" INDICATES CEILING MOUNT.	FLUSH	UC	UNDER COUNTER			⊢}⊱pts	VOLTAGE TRANSFORMERS.	
	DUPLEX RECEPTACLE: 120V, 20A; FLOOR MOUNTED.	FLUSH	V	VOLT			UPS	UNINTERRUPTIBLE POWER SUPPLY	
	QUAD RECEPTACLE: 120V, 20A; FLOOR MOUNTED.		VAC	VOLTS ALTERNATING C	CURRENT				
	DUPLEX RECEPTACLE AND DATA JACK: 120V, 20A; FLOOR MOUNTED.		VDC	VOLTS DIRECT CURREN	NT		120/208V T2		
	DATA JACK; FLOOR MOUNTED.		X-FMR	TRANSFORMER			277/480	TRANSFORMER 'T2' WITH SIZE, PRIMARY AND SECONDARY VOLTAGES AS NOTED.	
	ISOLATED GROUND DUPLEX RECEPTACLE. COORDINATE MOUNTING HEIGHT WITH MECHANICAL CONTRACTOR TO CLEAR	FLUSH	WP	WEATHERPROOF					
	BASEBOARDS. DUPLEX RECEPTACLE: 120V, 20A; WITH GROUND FAULT INDICATOR. COORDINATE MOUNTING HEIGHT WITH MECHANICAL			SYMBOL	.S LEGEND		*		
GFI	CONTRACTOR TO CLEAR BASEBOARDS.	FLUSH		100	ROOM DESIGNATION		۵) <u>100AF</u>	RACK OUT CIRCUIT BREAKER	
⊖ ^{uc}	DUPLEX RECEPTACLE: 120V, 20A; SUBSCRIPT "UC" INDICATES UNDER COUNTER	AS PER ENGINEER		5 A2.2	BUILDING SECTION CUT		0/ 100AT ¥		
€ ^{CT}	DUPLEX RECEPTACLE: 120V, 20A; SUBSCRIPT "CT" INDICATES COUNTER TOP.	AS PER ENGINEER					RVRM		
⊖≕ WP	DUPLEX RECEPTACLE: 120V, 20A; SUBSCRIPT "WP" INDICATED WEATHER PROOF.	AS PER ENGINEER		5 A2.2	WALL SECTION CUT		10	REDUCED VOLTAGE SOLID STATE RAMPING MODULE, SIZED FOR 10 H.P.	
USB	DUPLEX RECEPTACLE: 120V, 20A; SUBSCRIPT "USB" INDICATES INTEGRAL USB.	FLUSH		5 A2.2	DETAIL KEY		RVSS	REDUCED VOLTAGE SOLID STATE STARTER, SIZED FOR 150 H.P.	
♥ ⁴⁰ 240	SPECIAL PURPOSE OUTLET: 240V, 40A. VERIFY NEMA CONFIGURATION WITH EQUIPMENT MANUFACTURER.	AS PER ENGINEER			ELEVATION KEY		150 VFD		
	TWISTED LOCK RECEPTACLE: 125V, 20A, 3 WIRE; UNLESS OTHERWISE NOTED.	AS PER ENGINEER					25	VARIABLE FREQUENCY DRIVE, RATED FOR 25 H.P.	
	SURFACE RACEWAY WITH 2 GROUNDED AND ISOLATED TYPE DUPLEX RECEPTACLES AND 1 DATA OUTLET PER POSITION,		—	(H)	COLUMN GRID			FULL VOLTAGE NON-REVERSING STARTER, NEMA SIZE 6	
	18" AFF UNLESS OTHERWISE NOTED. MAGNETIC STARTER "S1"; SEE STARTER SCHEDULE			— •	ELEVATION LINE			FULL VOLTAGE REVERSING STARTER, NEMA SIZE 5	
$\square_{DS1} = \square_{DS1}$	DISCONNECTION SWITCH "DS1"; SEE DISCONNECT SWITCH SCHEDULE.		1 Titl SCALE:	le	DRAWING TITLE				
0	JUNCTION BOX.			: 			all s	FAST ACTING SOLID STATE FUSES AS PER MANUFACTURER.	
O _{4X}	NEMA 4X STAINLESS STEEL JUNCTION BOX WITH GASKET COVER.		3		INTERIOR ELEVATION REFERENCE			MULTIPLE BRANCH CIRCUITS AS REQUIRED.	
	JUNCTION BOX RECESSED IN WALL WITH BLANK COVER. PROVIDE 3/4" E.C. AND DRAG LINE TO ABOVE FINISHED CEILING. MOUNT 18" AFF, UNLESS OTHERWISE NOTED.			A2.2				CONTROL CIRCUIT; MIN 2 #12 AWG IN $\frac{3}{4}$ " E.C.	
O _M	FOR MONITOR, JUNCTION BOX RECESSED IN WALL WITH BLANK COVER. PROVIDE 3/4" E.C. AND DRAG LINE TO ABOVE]	#	SEE NOTE #		K	ELECTRONIC KEY INTERLOCK	
	FINISHED CEILING. FOR HAND DRYER, JUNCTION BOX RECESSED IN WALL WITH BLANK COVER. PROVIDE 3/4" E.C. AND DRAG LINE TO ABOVE			#	ON DWG #			MEDIUM VOLTAGE TRIP UNIT	
	FINISHED CEILING. COORDINATE MOUNTING HEIGHT WITH ARCHITECT.						LVTU	LOW VOLTAGE TRIP UNIT	
	TRANSFORMER "T1"; SEE TRANSFORMER SCHEDULE.						[MMD]	METER MONITOR DEVICE	
P1	ELECTRICAL PANEL "P1", RECESSED; SEE PANEL SCHEDULE.						32	REVERSE POWER RELAY	
	ELECTRICAL PANEL "P1", SURFACE MOUNT; SEE PANEL SCHEDULE.						50	INSTANTANEOUS OVERCURRENT PROTECTION	
(CONDUIT GOING UP.						500	GROUND INSTANTANEOUS OVERCURRENT PROTECTION	
	CONDUIT GOING DOWN.						51	INVERSE TIME OVERCURRENT PROTECTION	
↑	TELEPHONE. PROVIDE 3/4" E.C. WITH DRAG LINE TO AFC AND EMPTY J. BOX RECESSED IN WALL WITH BLANK COVER.						516	GROUND INVERSE OVERCURRENT PROTECTION	
₽	CABLE TELEVISION. PROVIDE 3/4" E.C. WITH DRAG LINE TO AFC AND EMPTY J. BOX RECESSED IN WALL WITH BLANK COVER.						(51N)	NEUTRAL INVERSE TIME OVERCURRENT PROTECTION	
	DATA. PROVIDE 3/4" E.C. WITH DRAG LINE TO AFC AND EMPTY J. BOX RECESSED IN WALL WITH BLANK COVER.						86	LOCKOUT RELAY	
D/T	COMBINED DATA AND TV. PROVIDE 3/4" E.C. WITH DRAG LINE TO AFC AND EMPTY J. BOX RECESSED IN WALL WITH BLANK COVER.						87	DIFFERENTIAL PROTECTION RELAY	
▲	SECURITY CAMERA. PROVIDE 3/4" E.C. WITH DRAG LINE TO AFC AND EMPTY J. BOX RECESSED IN WALL WITH BLANK								
	COVER.		ļ				<-52→> +⊷ ^{LA} ⊷	DRAWOUT MEDIUM VOLTAGE CIRCUIT BREAKER LIGHTING ARRESTOR	
								OPEN DELTA WINDING	
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1									
								FUSE, SIZE AS INDICATED	
							À	INDICATOR OR PILOT LIGHT: R-RED, B-BLUE, W-WHITE, G-GREEN, A-AMBER, O-ORANGE	

		GENERAL	NOTES	H 2 architects
;	1.	ALL POWER, LIGHTING, AND CONTROLS CONI EXACT RUNS SHALL BE DETERMINED BY THE EXCEPT WHERE SPECIFICALLY DIMENSIONED	ELECTRICAL CONTRACTOR IN THE FIELD,	
	2. 3. 4.	ALL EXPOSED CONDUIT SHALL BE RUN PARA EXCEPT WHERE OTHERWISE SHOWN ON PLA EXPOSED CONDUIT SHALL BE SUPPORTED FF APPROVED HANGERS OF ANGLE OR CHANNE EXPANSION FITTINGS OF THE APPROVED TYP	NS. ROM WALLS AND/OR CEILING BY L CONSTRUCTION. PE SHALL BE FURNISHED AND INSTALLED	Mengineers
	5.	WHERE CONDUITS EXPOSED OR CONCEALER EXACT CONDUIT STUB-UP LOCATIONS ARE TO CONTRACTOR BASED ON THE CERTIFIED MAN RESPECTIVE EQUIPMENT. CONDUITS FOR TH BASED ON THE REQUIREMENTS OF THE ACTU	D BE DETERMINED BY THE ELECTRICAL NUFACTURER'S DRAWINGS OF THE E EQUIPMENT SHALL BE INSTALLED	538 Broad Hollow Road, 4th Floor East Melville, NY 11747 631.756.8000 ▪ www.h2m.com NY Architecture & Landscape Architecture: No Certificate Required NY Engineering Certificate of Authorization No. 0018178
	6. 7.	ALL PANELBOARD CIRCUIT BREAKERS SHALL OTHERWISE ALL SINGLE PHASE POWER AND LIGHTING CO 1-NEUTRAL, 1-GROUND) AWG. UNLESS NOTED	NDUITS SHALL BE 3/4" WITH 3 # 12 (1-HOT,	CONSULTANTS:
	8.	FOR CONTRACT CABLE AND CONDUIT SCHED SPECIFICATIONS. WHERE CABLE AND CONDU DRAWINGS, THE CABLE AND CONDUIT SHALL THE CABLE AND CONDUIT SCHEDULE.	ULE , REFER TO CONTRACT IT IS NOT SHOWN ON THE CONTRACT	
	9.	ALL ELECTRICAL WORK SHALL CONFORM TO ELECTRIC CODE AND NEW YORK CITY ELECT APPLICABLE FEDERAL STATE AND LOCAL LAW	RICAL CODE, AS WELL AS THE OTHER	MARK DATE DESCRIPTION
	10.	ALL EXTERIOR AND INTERIOR ENCLOSURES S STEEL UNLESS OTHERWISE NOTED. ALL EQU NEMA TYPE 12 UNLESS OTHERWISE NOTED.		
	11.	ALL COMPONENTS OF THE ELECTRICAL SYST ACCORDANCE WITH NEC, NEW YORK CITY EL RECOMMENDATION		01-31-2025 Final Bid Document 08-16-2024 100% Submission
_	12.	CONTRACTOR SHALL FURNISH AND INSTALL A TO PROVIDE A COMPLETED SYSTEM IN WORK		02-02-2024 DOB Submission 10-13-2023 Submitted to Client 11-08-2019 Submitted to Client
	13.	CONTRACTOR SHALL FURNISH AND INSTALL A ELECTRICAL EQUIPMENT AND ALL INTERCON PROVIDED UNDER ALL SECTIONS OF THIS CO THIS PROJECT SHALL BE COPPER.	NECTING WIRES FOR COMPONENTS	
	14. 15.	ALL SWITCHES, CIRCUIT BREAKERS AND SUB VIA NAMEPLATE. REFER TO THE HVAC DRAWINGS FOR HVAC E		
	16.	THE SYMBOLS AND ABBREVIATIONS LISTED F STANDARD GUIDE INTENDED FOR GENERAL U PROJECT. THEREFORE, NOT ALL OF THE SYM	REPRESENT A COMPREHENSIVE JSE ON THE BROOKLYN NAVY YARD BOLS AND ABBREVIATIONS CONTAINED	
	17.	IN THIS LIST ARE NECESSARILY USED FOR TH ALL GROUND CONDUCTORS STUBBED UP SH CONDUIT & BE BONDED TO THE GROUND CON	ALL BE INSTALLED IN PVC SCHEDULE 80	
	18.	CROSS OFF LINE // INDICATES DEMOL	TION AND REMOVAL. (UNLESS	07/31/2025 CHARLIE J. STARKE, P.E. NY PROFESSIONAL ENGINEER Lic. No. 093837 TN ACCORDANCE WITH ARTICLE 145, SECTION 7269 OF THE MYS EDUCATION LAW, ALTERATION OF THIS DOCUMENT EXCEPT BY LICENSE PROFESSIONAL IS ILLEGAL.
	19.	WHEREVER THE INSTALLATION OF ELECTRIC DRAWINGS IS IMPRACTICAL DUE TO LOCAL IN CONTRACTOR SHALL INSTALL THE EQUIPMEN THE ENGINEER, AT NO EXTRA COST.	TERFERENCE OR OTHER REASONS THE	"ALTERATION OF THIS DOCUMENT EXCEPT BY A LICENSED PROFESSIONAL IS ILLEGAL" DESIGNED BY: DRAWN BY: CHECKED BY: REVIEWED BY: CJD/CJS CJD - ° - PROJECT No.: DATE: SCALE: BNYD 1901 JANUARY 2025 AS SHOWN
	20.	ALL EQUIPMENT SHALL BE WIRED IN ACCORD SCHEDULE (SPECIFICATION SECTION 260553) SCHEDULES DO NOT INDICATE LIGHTING AND SOME OF THE OTHER CABLE AND CONDUIT T THE CONTRACTOR IS ADVISED TO REFER TO DRAWINGS FOR THE FULL EXTENT OF THE CA	IN GENERAL, THE CABLE AND CONDUIT RECEPTACLE CIRCUITS, AS WELL AS O BE PROVIDED UNDER THIS CONTRACT. BOTH THE SPECIFICATIONS AND	Brooklyn Navy Yard Development Corporation
		SCHEDULE (SPECIFICATION SECTION 260553) SCHEDULES DO NOT INDICATE LIGHTING AND SOME OF THE OTHER CABLE AND CONDUIT T THE CONTRACTOR IS ADVISED TO REFER TO	IN GENERAL, THE CABLE AND CONDUIT RECEPTACLE CIRCUITS, AS WELL AS O BE PROVIDED UNDER THIS CONTRACT. BOTH THE SPECIFICATIONS AND BLE AND CONDUIT REQUIREMENTS. ED AS PART OF THIS PROJECT R TO	CLIENT Brooklyn Navy Yard
	21.	SCHEDULE (SPECIFICATION SECTION 260553) SCHEDULES DO NOT INDICATE LIGHTING AND SOME OF THE OTHER CABLE AND CONDUIT T THE CONTRACTOR IS ADVISED TO REFER TO DRAWINGS FOR THE FULL EXTENT OF THE CA FOR ALL EQUIPMENT SCHEDULED TO BE REF CONTRACTOR SHALL TEST OPERATION PRIOD	IN GENERAL, THE CABLE AND CONDUIT RECEPTACLE CIRCUITS, AS WELL AS O BE PROVIDED UNDER THIS CONTRACT. BOTH THE SPECIFICATIONS AND ABLE AND CONDUIT REQUIREMENTS. ED AS PART OF THIS PROJECT R TO SENCE OF ENGINEER.	CLIENT Brooklyn Navy Yard Development Corporation Restoration of Building 275
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LEGEN	NDS
	REMOVE & DISPOSE OF



AREA OF WORK

Site Key Plan



DEMOLITION GENERAL NOTES:

- G1. REMOVE AND DISPOSE OF INCLUDES REMOVAL OF ITEM IDENTIFIED INCLUDING ALL CONDUITS, WIRES, AND CABLES, BACK TO SOURCE UNLESS OTHERWISE NOTED.
- G2. ALL CONDUITS SPECIFIED TO BE REMOVED SHALL BE CUT BELOW THE SURFACE TO ALLOW FOR FLUSH PATCHING WITH THE FLOOR UNLESS OTHERWISE NOTED. SURFACE SHALL BE PRIMED AND PAINTED TO MATCH EXISTING.
- G3. REFER TO DIVISION 01 MOBO SPECIFICATION SECTION '017001' PRIOR TO PERFORMING ANY DEMOLITION AND/OR NEW WORK FOR ADDITIONAL INFORMATION REGARDING PHASING OF WORK AND MAINTENANCE OF OPERATIONS.

NOTES:

- REMOVE AND DISPOSE OF EXISTING SUBSTATION. COORDINATE SHUTDOWN AND TRANSFER OF LOADS TO NEW SUBSTATION WITH CLIENT AND ENGINEER IN ACCORDANCE WITH DIVISION 01 MOBO SPECIFICATION '017001'. REFER TO DRAWING E200.00 FOR ADDITIONAL INFORMATION.
- DISCONNECT, PULL BACK, AND SAFE OFF EXISTING 208V FEEDER IN BASEMENT BELOW. FEEDERS SHALL BE SPLICED AND EXTENDED FROM THE BASEMENT TO THE NEW SUBSTATION LOCATION VIA A NEW CEILING MOUNTED JUNCTION BOX IN BASEMENT. REFER TO DRAWING E-200.00 FOR ADDITIONAL INFORMATION.
- 3. CONTRACTOR SHALL REMOVE EXISTING CONCRETE HOUSE KEEPING PAD IN ITS ENTIRETY AND MAKE FLUSH WITH THE FINISHED FLOOR. PATCH AND REPAIR AS REQUIRED TO MATCH SURROUNDING FLOOR FINISH.
- 4. REMOVE AND DISPOSE OF ALL LIGHT FIXTURES, SWITCHES, AND RECEPTACLES WITHIN DESIGNATED AREA. ALL ASSOCIATED CONDUIT AND WIRE SHALL BE REMOVED AND DISPOSED OF BACK TO SOURCE. ALL DISTURBED SURFACES SHALL BE PRIMED AND PAINTED TO MATCH EXISTING SURROUNDINGS. UNLESS OTHERWISE NOTED.
- 5. CONTRACTOR SHALL REMOVE AND DISPOSE OF PANELBOARD INDICATED. ALL BRANCH BREAKERS SHALL BE PULLED BACK TO CLOSEST JUNCTION BOX. SPLICE AND EXTEND ALL BRANCH FEEDERS TO NEW PANELBOARD LOCATION. REFER TO DRAWING E200.00 AND E400.00 FOR ADDITIONAL INFORMATION.
- 6. EXISTING JUNCTION BOX ASSOCIATED WITH METER #2 SHALL REMAIN FOR RE-USE. EXISTING LOAD SIDE CONDUIT FROM METER SHALL BE PULLED BACK TO JUNCTION BOX AND SAFED OFF FOR RE-TERMINATION TO NEW METER #3. ALL WIRING SHALL BE CUT BACK TO SOURCE AND REMOVED. REFER TO DRAWING E-200.00 FOR ADDITIONAL INFORMATION.
- CONTRACTOR SHALL DISCONNECT, PULL BACK, AND SAFE OFF EXISTING BUILDING 132 FEEDERS AND PREPARE THE FEEDERS FOR EXTENSION AND TERMINATION TO NEW SWITCHBOARD. REFER TO DRAWING E-200.00 AND E-400.00 FOR ADDITIONAL INFORMATION.
- ALL SWITCHGEAR LOADS EXITING THE TOP OF THE EXISTING SWITCHGEAR SHALL BE DISCONNECTED, PULLED BACK, AND SAFED OFF FOR EXTENSION AND TERMINATION TO NEW SWITCHBOARD VIA EXISTING JUNCTION BOX 'JB1' LOCATED IN ADJACENT ROOM.
- 9. CONTRACTOR SHALL REMOVE AND DISPOSE OF EXISTING ELEVATOR TRANSFORMER, AND ALL FEEDERS ASSOCIATED WITH THE ELEVATOR TRANSFORMER UP TO THE ELEVATOR JUNCTION BOX. CONDUCTORS IN THE ELEVATOR JUNCTION BOX SHALL REMAIN FOR RE-USE.
- 10. DISCONNECT WIRE AND CONDUIT TO ALLOW FOR THE REMOVAL OF EXISTING METER #1. REMOVED AND DISPOSE OF ALL WIRE AND CONDUIT BACK TO SOURCE. REFER TO DRAWING E-200.00 FOR ADDITIONAL INFORMATION.
- 11. EXISTING COMMUNICATION PANEL SHALL BE RELOCATED TO NEW LOCATION INDICATED ON DRAWING E-200.00 AND TIED INTO NEW SWITCHBOARD. PROVIDE ALL CONDUIT AND WIRE AS REQUIRED TO EXTEND THE COMMUNICATION TO THE NEW LOCATION.
- 12. CONTRACTOR SHALL REMOVE AND DISPOSE OF ALL EXISTING FEEDERS FROM THE FIRST FLOOR METER BACK TO THE EXISTING SWITCHGEAR. FIRST FLOOR METER SHALL REMAIN IN PLACE AND WILL BE RE-FED FROM NEW SWITCHBOARD. REFER TO DRAWING E-200.00 FOR ADDITIONAL INFORMATION.

NYC DOB EMPLOYEE STAMP/SIGNATURE

RELATED APPLICATIONS:

MECHANICAL:

2. STRUCTURAL:

3. ARCHITECTURAL:

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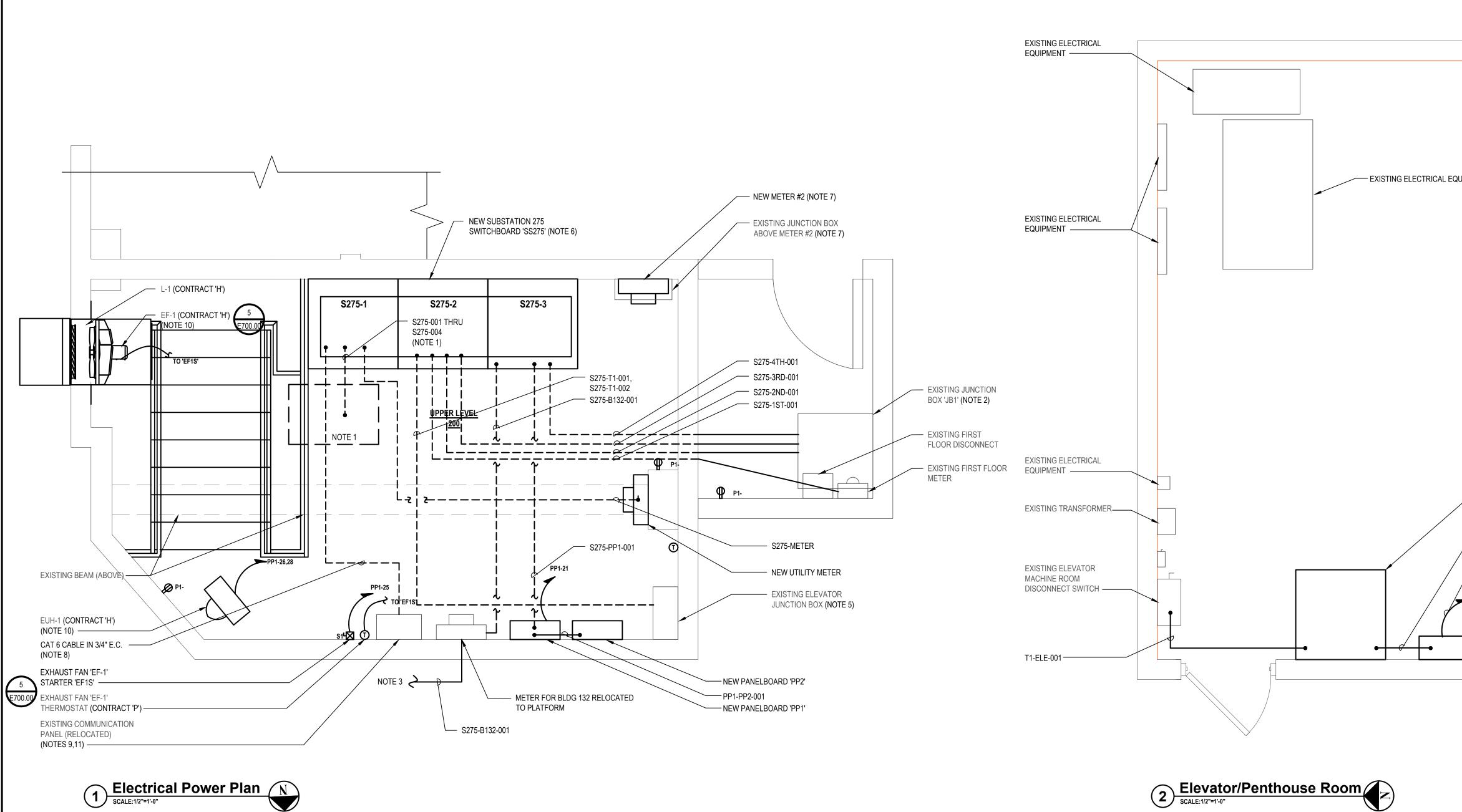
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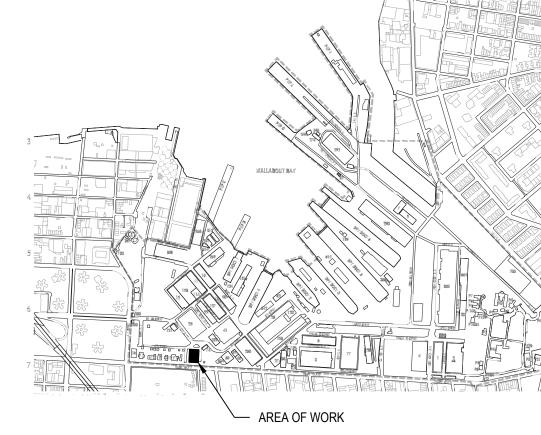
POWER PLAN GENERAL NOTES:

- G1. REFER TO MOBO SPECIFICATION SECTION '017001' PRIOR TO PERFORMING ANY DEMOLITION AND/OR NEW WORK FOR ADDITIONAL INFORMATION REGARDING PHASING OF WORK AND MAINTENANCE OF OPERATIONS.
- G2. DASH CONDUIT AND EQUIPMENT INDICATES RUN / INSTALLED BELOW PLATFORM.
- G3. REFER TO SPECIFICATION 260553 FOR CABLE AND CONDUIT SCHEDULE.

POWER PLAN GENERAL NOTES:

- 1. PROVIDE AND INSTALL NEW JUNCTION BOX IN BASEMENT FOR INCOMING 208V FEEDERS. PROVIDE ALL HARDWARE AND ACCESSORIES AS REQUIRED TO SPLICE AND EXTEND EXISTING 208V FEEDERS FROM THE NEW CEILING MOUNTED JUNCTION BOX IN THE BASEMENT BELOW TO THE NEW SUBSTATION LOCATED ON THE RAISED PLATFORM. REFER TO DIVISION 01 MOBO SPECIFICATION '017001' FOR ADDITIONAL DETAIL.
- 2. CONTRACTOR SHALL PROVIDE A COLLAR ON THE EXISTING JUNCTION BOX INDICATED TO ASSIST IN THE EXTENDING, SPLICING, AND RE-ROUTING OF THE EXISTING FEEDERS TO THE NEW SWITCHBOARD LOCATED ON THE ELEVATED PLATFORM. ALL CONDUITS SHALL BE ROUTED BELOW THE ELEVATED PLATFORM TO BOTTOM FEED INTO THE NEW SWITCHBOARD. PROVIDE ALL HARDWARE AND ACCESSORIES AS REQUIRED TO SECURELY MOUNT NEW CONDUIT TO UNDERSIDE OF PLATFORM.
- PROVIDE ALL HARDWARE AND ACCESSORIES AS REQUIRED TO SPLICE AND EXTEND 3. EXISTING BUILDING 132 FEEDER TO NEW TRANS-'S' CABINET INDICATED.
- 4. SHUTDOWN OF THE ELEVATOR TRANSFORMER, REMOVAL OF EXISTING TRANSFORMER, AND INSTALLATION OF THE NEW TRANSFORMER SHALL BE COORDINATED WITH THE CLIENT AND ENGINEER IN ACCORDANCE WITH DIVISION 01 MOBO SPECIFICATION '017001'.
- CONTRACTOR SHALL ROUTE ELEVATOR FEEDER CABLE THROUGH THE EXISTING 5. ELEVATOR JUNCTION BOX INDICATED AND EXISTING SPARE CONDUIT TO NEW TRANSFORMER LOCATION. SPLICE AND EXTEND FEEDERS AS REQUIRED.
- 6. ALL CONDUIT ROUTING ASSOCIATED WITH THE NEW SUBSTATION 'S275' LOAD BREAKERS SHALL BE ROUTED BELOW THE NEW ELEVATOR PLATFORM. PROVIDE ALL MOUNTING HARDWARE AS REQUIRED TO HANG CONDUIT TO THE BOTTOM OF THE ELEVATED PLATFORM.

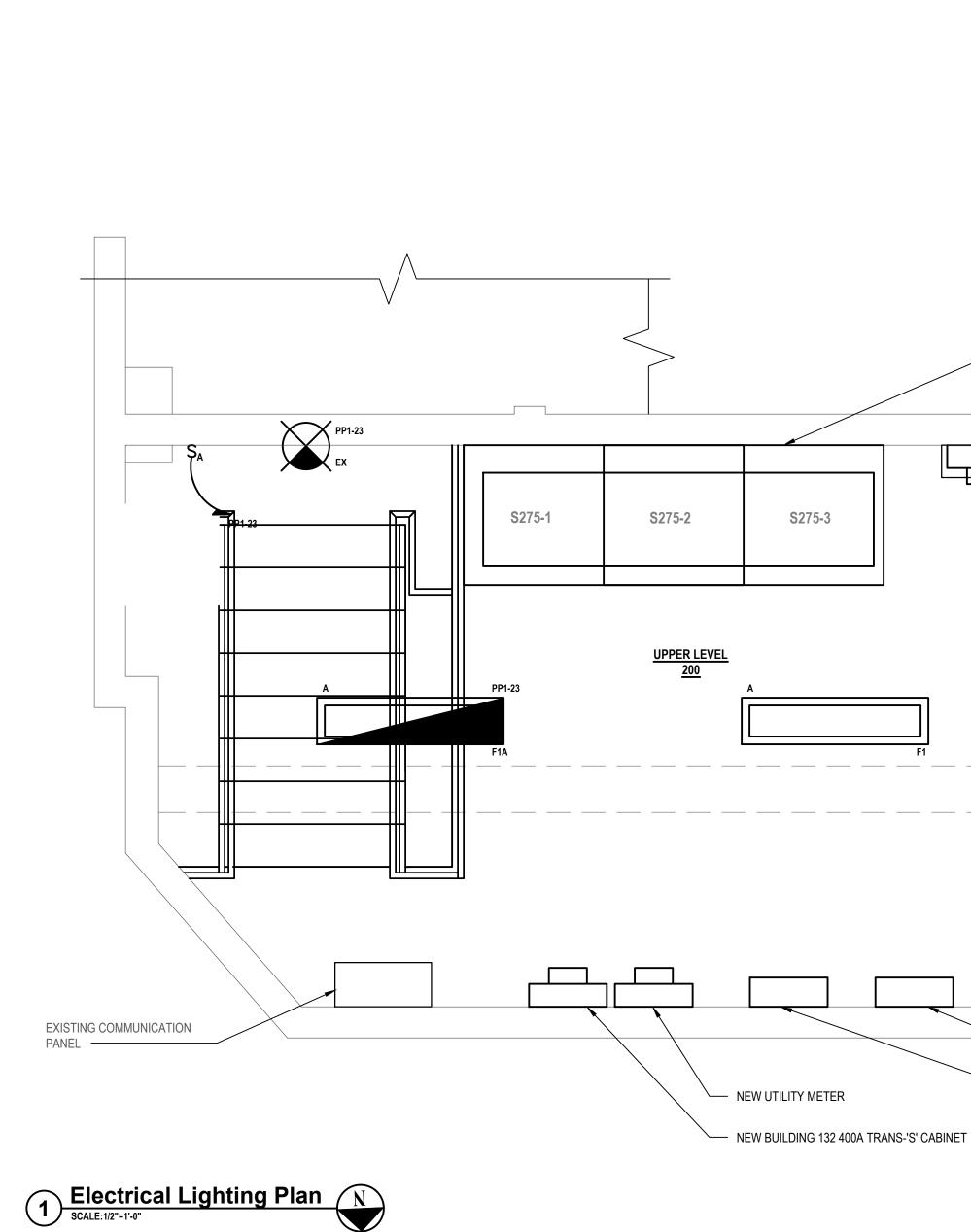
- 7. CONTRACTOR SHALL EXTEND EXISTING LOAD SIDE CONDUIT AS REQUIRED FROM EXISTING METER #2 JUNCTION BOX TO NEW METER #2. PROVIDE ALL HARDWARE AS REQUIRED.
- 8. CONTRACTOR SHALL TERMINATE TO EXISTING FIBER TO ETHERNET MEDIA CONVERTER.
- 9. CONTRACTOR SHALL DISCONNECT EXISTING COMMUNICATION CABLE FROM EXISTING SWITCHGEAR AND ASSOCIATED MEDIA CONVERTER BOX AND TURN OVER TO OWNER.
- 10. CONTRACTOR SHALL FIELD INSTALL DISCONNECT SWITCH PROVIDED BY EQUIPMENT MANUFACTURER. CONTRACTOR IS RESPONSIBLE TO INSTALL/INTEGRATE WITH UNIT IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
- 11. CONTRACTOR SHALL EXTEND EXISTING CONDUIT AND WIRE AS NEEDED TO THE NEW LOCATION OF EXISTING COMMUNICATION PANEL.

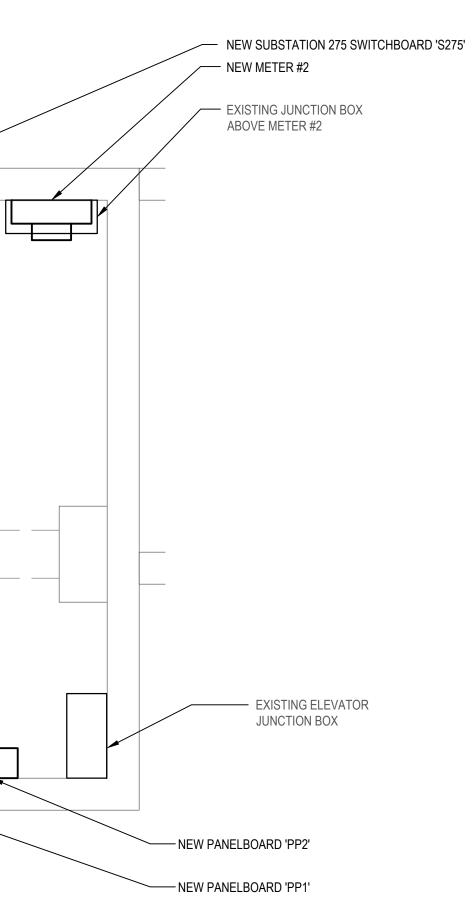


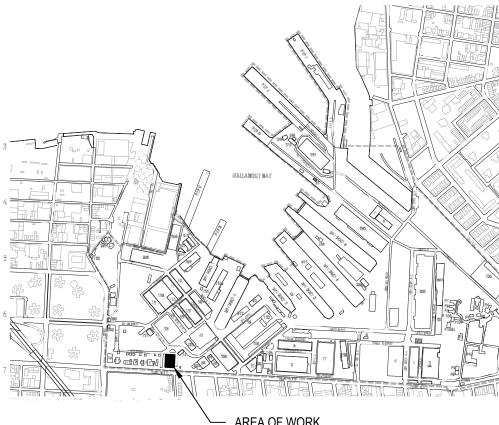
Site Key Plan

SCALE:N.T.S.

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RELOCATED TRANSFORMER 'T1' (NOTE 4) S275-T1-001B, S275-T1-002B S275-T1-001A, S275-T1-002A				
S275-2 TRANSFORMER DISCONNECT SWITCH DSW-T1		"IN ACCORDANCE WITH ARTICLE 145, SE	CJD DATE:	IR Lic. No. 093837 SN of this document except by License professional is illegal* NSED PROFESSIONAL IS ILLEGAL* KED BY: SCALE:
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AREA OF WORK

Site Key Plan

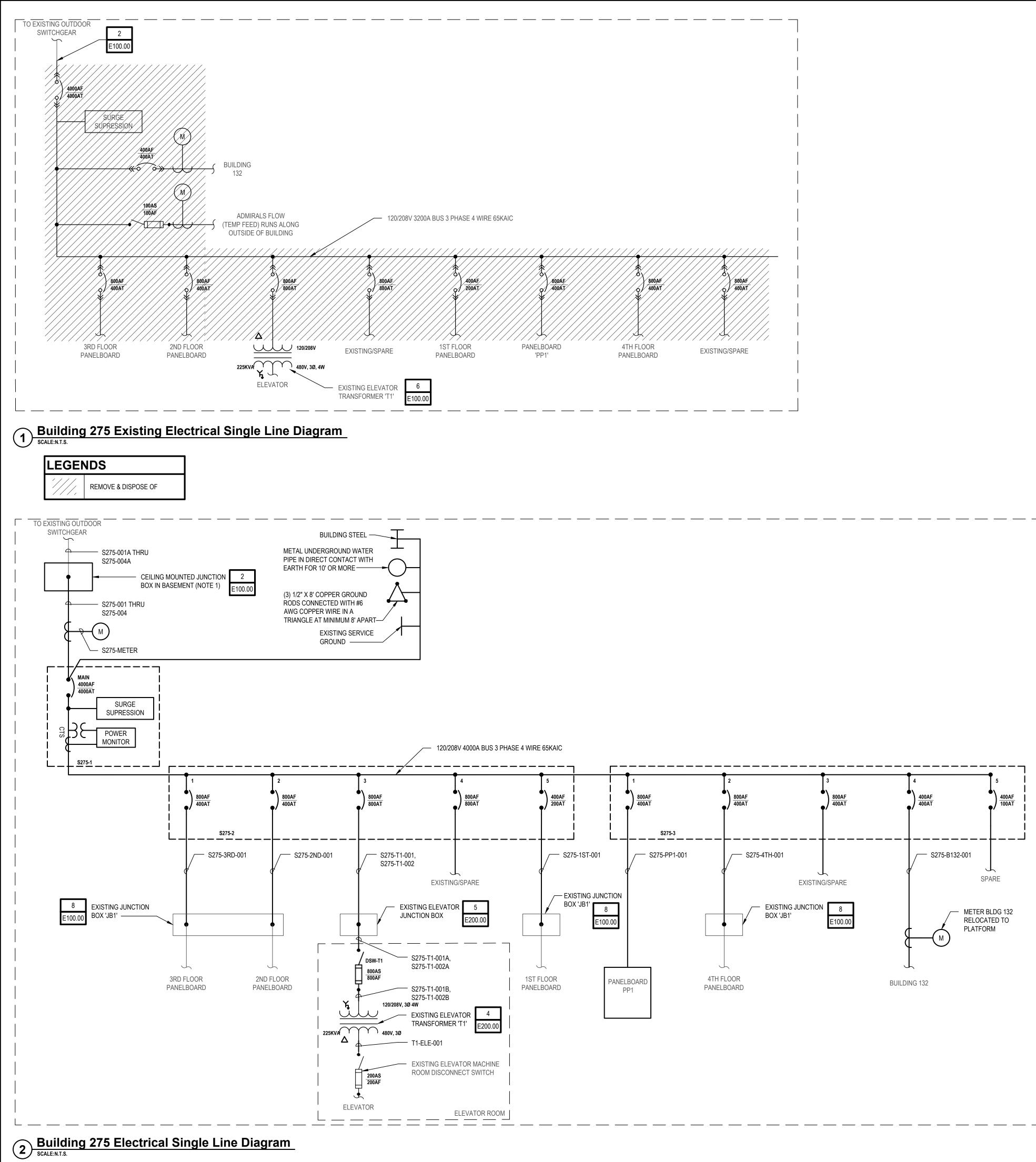
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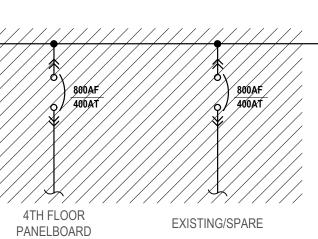
LIGHTING GENERAL NOTES:

- G1. PROVIDE ALL REQUIRED WIRING NECESSARY BETWEEN SWITCHES, CONTROLLERS AND/OR OCCUPANCY SENSORS FOR COMPLETE LIGHTING CONTROL. WHERE 3 OR 4 WAY SWITCHES ARE USED, PROVIDE ALL REQUIRED WIRING BETWEEN SWITCHES. WIRE SIZE SHALL EQUAL POWER FEED SIZE.
- G2. FIXTURES INDICATED WITH CIRCUIT DESIGNATIONS SHALL BE CONNECTED TO LINE SIDE OF CIRCUIT. G3. FIXTURES INDICATED WITH LETTER DESIGNATIONS SHALL BE CONNECTED TO THE
- SWITCH, OCCUPANCY SENSOR AND/OR POWER PACK WITH CORRESPONDING LETTER DESIGNATION.
- G4. PROVIDE AND INSTALL A DEDICATED NEUTRAL FOR EACH CIRCUIT. CONTRACTOR IS NOT PERMITTED TO USE COMMON NEUTRALS.
- G5. VERIFY EXACT LOCATIONS AND MOUNTING HEIGHTS WITH ARCHITECT/ENGINEER IN FIELD. G6. ALL CEILING MOUNTED FIXTURES WITH EMERGENCY BALLASTS AND ALL FIXTURES
- THAT ARE PART OF AN EMERGENCY LIGHTING SYSTEM, FED FROM AN EMERGENCY GENERATOR OR CENTRAL BATTERY SYSTEM SHALL BE LABELED. THESE LABELS SHALL BE EASILY READ FROM THE FLOOR LEVEL AND STATE THAT THE FIXTURE IS AN EMERGENCY FIXTURE AND CONTAIN THE PANEL NAME AND CIRCUIT NUMBER THAT IT IS FED FROM.
- G7. WIRING FOR EMERGENCY BALLAST IS NOT SHOWN ON PLANS. FIXTURES WITH EMERGENCY BALLASTS SHALL BE PROVIDED WITH AN UNSWITCHED POWER FEED FROM CIRCUIT FEEDING LIGHT FIXTURE.
- G8. PROVIDE ALL HARDWARE AND ACCESSORIES TO MOUNT FIXTURES SECURELY. COORDINATE EXACT MOUNTING HEIGHT WITH ARCHITECT/ENGINEER IN FIELD.

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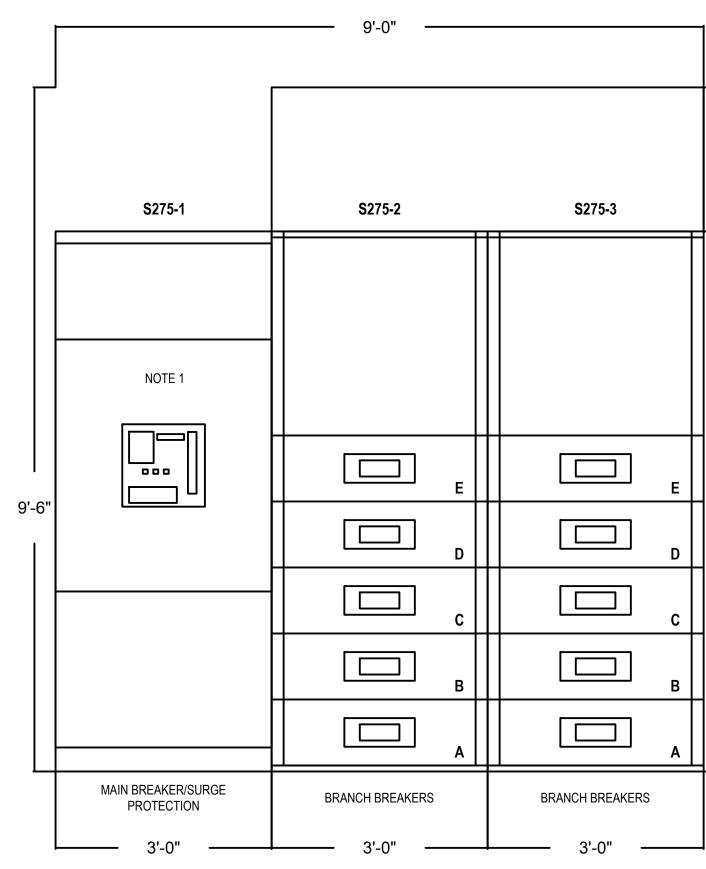
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- SINGLE LINE GENERAL NOTES:
- CONTRACTOR SHALL SPLICE AND EXTEND THE EXISTING PRIMARY FEEDERS AS 1. REQUIRED THROUGH THE NEW CEILING MOUNTED JUNCTION BOX IN THE BASEMENT TO THE NEW SWITCHBOARD. ALL NEW EQUIPMENT IS TO BE INSTALLED IN DOORS, PROVIDE NEMA 1
- ENCLOSURES.
- REFER TO SPECIFICATION 260553 FOR CABLE AND CONDUIT SCHEDULE.

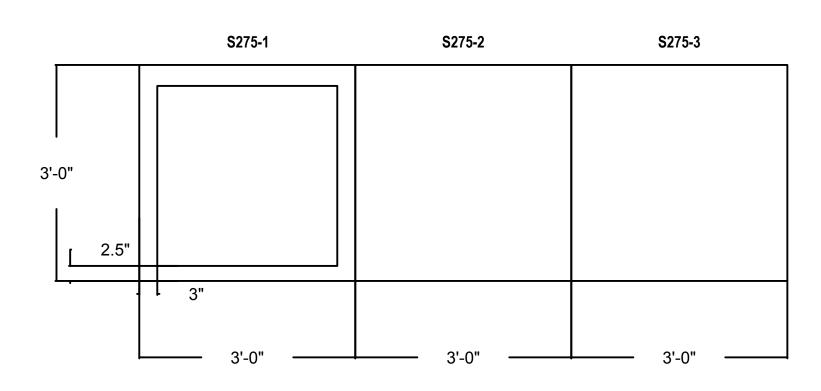
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1 Building 275 Substation Elevation

NOTE:

 SURGE SUPPRESSOR SHALL BE INSTALLED WITHIN THE SAME SECTION AS THE MAIN BREAKER REFER TO SPECIFICATION SECTION '262300' FOR ADDITIONAL INFORMATION.



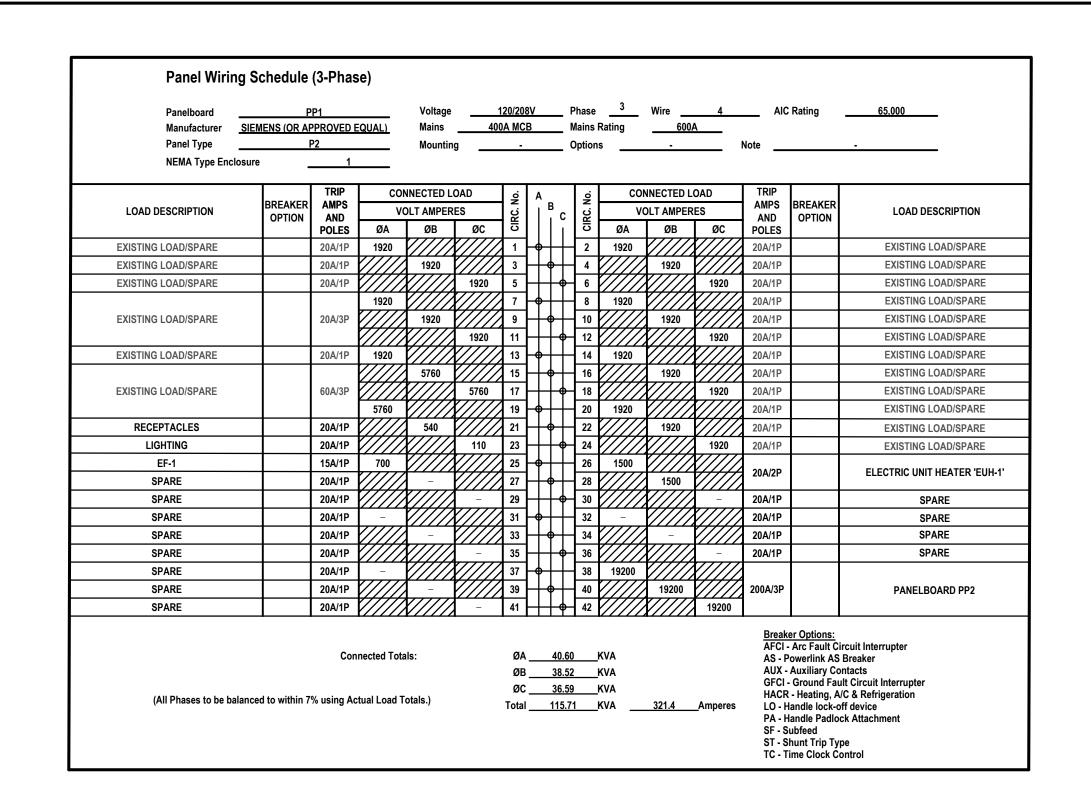
2 Building 275 Substation Plan View

SW	IT
SECTION	
SS275-1	
SS275-2A	
SS275-2B	
SS275-2C	
SS275-2D	
SS275-2E	
SS275-3A	
SS275-3B	
SS275-3C	
SS275-3D	
SS275-3E	



TCHGEAR ELEVATION SCHEDULE
DESCRIPTION
SUBSTATION 127A MAIN BREAKER
3RD FLOOR PANELBOARD
2ND FLOOR PANELBOARD
ELEVATOR TRANSFORMER T'1'
SPARE
1ST FLOOR PANELBOARD
PANELBOARD PP1
4TH FLOOR PANELBOARD
SPARE
BUILDING 132
SPARE

	H 2 architects
DULE	M engineers
	538 Broad Hollow Road, 4th Floor East Melville, NY 11747 631.756.8000 • www.h2m.com
	NY Architecture & Landscape Architecture: No Certificate Required NY Engineering Certificate of Authorization No. 0018178
	MARK DATE DESCRIPTION
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	02-02-2024 DOB Submission 10-13-2023 Submitted to Client 11-08-2019 Submitted to Client
	07/31/2025 CHARLIE J. STARKE, P.E. EXP. DATE NY PROFESSIONAL ENGINEER LIC. NO. 093837 Th accordance with article 145, section 7209 of the kyrs education law, alternation of this document except by a licensed professional is illegal."
	DESIGNED BY: DRAWN BY: CHECKED BY: REVIEWED BY: CJD/CJS CJD - - PROJECT No.: DATE: SCALE: BNYD 1901 JANUARY 2025 AS SHOWN
	Brooklyn Navy Yard Development Corporation
	Restoration of Building 275 Indoor Substation
	B N Y
NYC DOB EMPLOYEE STAMP/SIGNATURE	63 Flushing Avenue, Suite 300 Brooklyn, NY 11205
	CONTRACT ALL CONTRACTS
	SHEET TITLE
	SHEET TITLE ELECTRICAL SWITCHGEAR ELEVATION AND PLAN VIEW
RELATED APPLICATIONS:1. MECHANICAL:B00994105-I12. STRUCTURAL:B00994105-S23. ARCHITECTURAL:B00994105-S1	DRAWING NO. E-500.00



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INTERIO	INTERIOR LIGHTING FIXTURE SCHEDULE										
DESIGNATION	SYMBOL	MANUFACTURER	MODEL NUMBER	TYPE	WATTS	COLOR TEMPERATURE	VOLTAGE	LUMENS	MOUNTING	REMARKS	MOUNTING HEIGHT
F1	• •	COLUMBIA LIGHTING	LXEM4-40HL-DFA-EU	LED	52	4000K	120	5800	PENDANT	-	SURFACE
F1A	0	COLUMBIA LIGHTING	LXEM4-40HL-DFA-EU-ELL14	LED	52	4000K	120	5800	PENDANT	NOTE 1	SURFACE
EX	\boxtimes	COMPASS	CER	LED	2	-	120	-	SURFACE	NOTE 1	CEILING

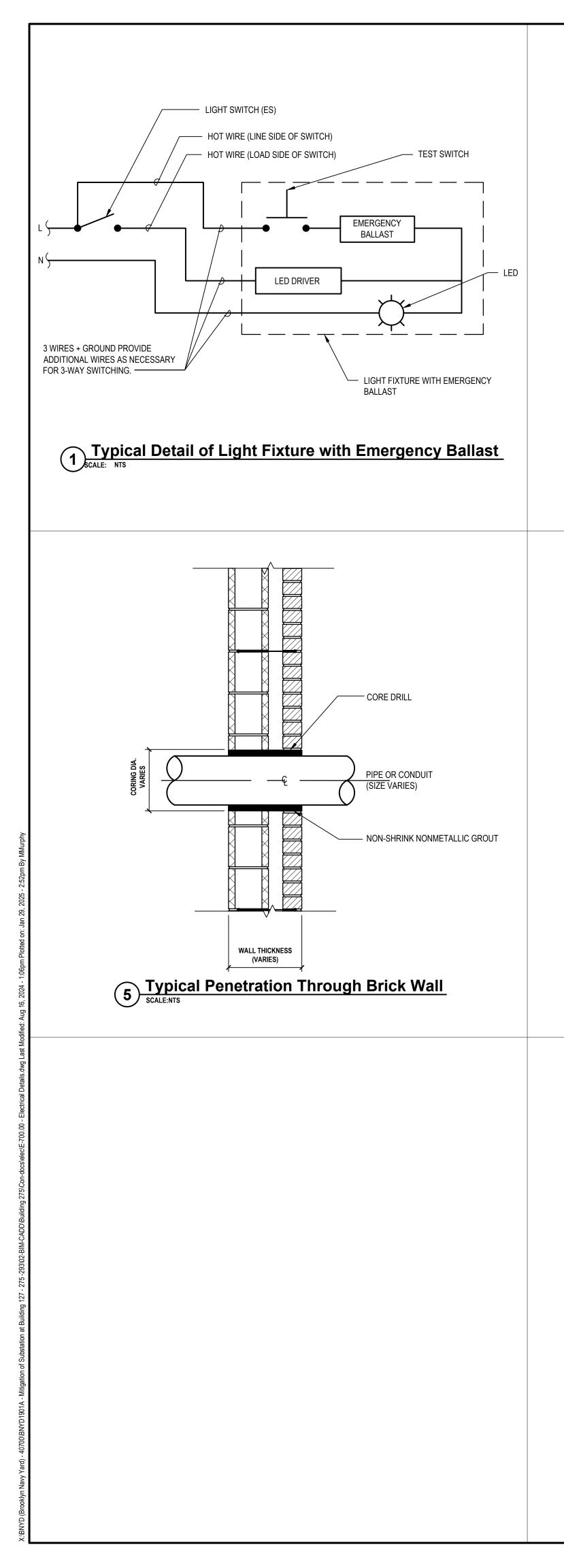
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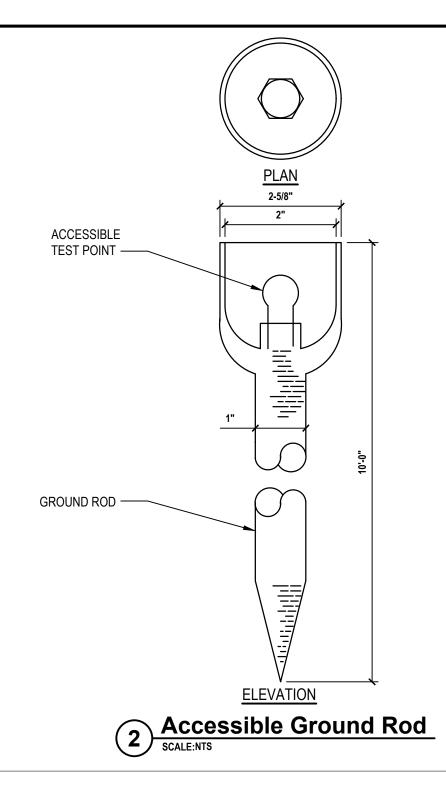
1. INTEGRAL EMERGENCY BACKUP WITH MINIMUM 90 MINUTES OF BACKUP CAPACITY

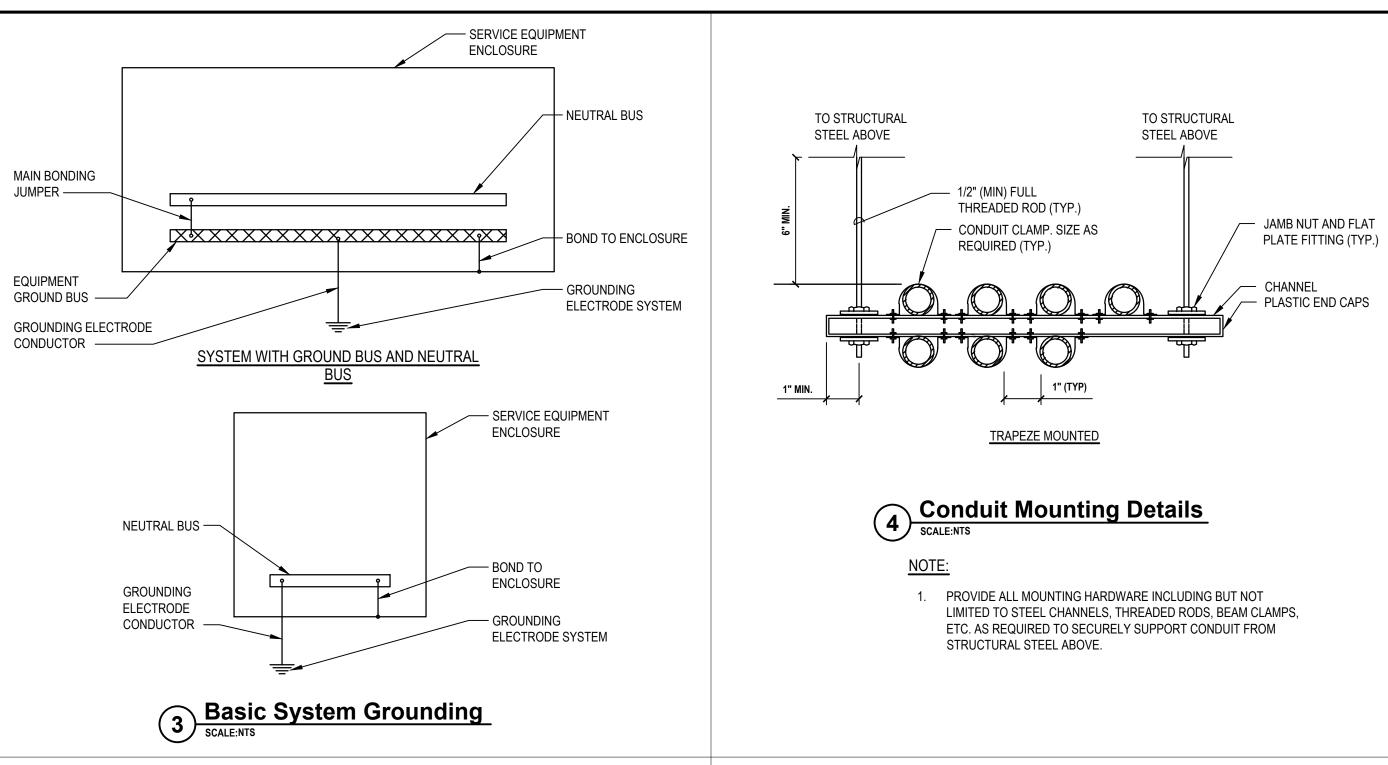
DISCONNECT SWITCH SCHEDULE						
DISCONNECT SWITCH IDENTIFICATION	ТҮРЕ	ENCLOSURE	VOLTS	POLES	FRAME SIZE AMPS	FUSE RATING
DSW-T1	FUSED	NEMA 12	250	3	800 A	800 A



	H		arc	hitects
MOUNTING HEIGHT		N	eng	jineers
SURFACE				
SURFACE	NY Archite	Melvi 631.756.80 cture & Landscap	ow Road, 4th Floor ille, NY 11747 00 • www.h2m.com e Architecture: No Cert cate of Authorization No	ificate Required
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CHANNEL PLASTIC END CAPS	538 Broad Hollow Road, 4th Floor East Melville, NY 11747 631.756.8000 - www.h2m.com NY Architecture & Landscape Architecture: No Certificate Required NY Engineering Certificate of Authorization No. 0018178
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	Development Corporation Restoration of Building 275 Indoor Substation
NYC DOB EMPLOYEE STAMP/SIGNATURE	63 Flushing Avenue, Suite 300 Brooklyn, NY 11205
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	STATUS FINAL BID DOCUMENT
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LEAD BASED PAINT DESCRIPTION AND QUANTITY TABLE					
LOCATION / SAMPLE #	ROOM / COMPONENT	SUBSTRATE	COLOR	% BY WEIGHT	INTERPRETATIO
INTERIOR / 1	VESTIBULE FLOOR	CONCRETE	BLUE	0.013%	LEAD CONTAINING F
INTERIOR	ELECTRIC ROOM	METAL DOOR AND DOOR FRAME	GRAY	>0.5%	LEAD BASED PAI
TABLE NOTES	•	•			

TABLE NOTES:

1. LEAD BASED PAINT (LBP) = EPA DEFINED LBP OR LEAD CONCENTRATION EQUAL TO OR ABOVE 0.5% BY WEIGHT.

2. LAB DETECTION REPORTING LIMIT IS 0.008%

* LEAD SAMPLE CONCENTRATION ABOVE LAB DETECTION LIMIT BUT BELOW EPA THRESHOLD FOR LBP, REFER TO OSHA 29 CFR 1926.62 FOR TRAINING AND HANDLING GUIDANCE OF LEAD CONTAINING MATERIALS (LCM) OR INCIDENTALLY IMPACTED LEAD BASE PAINT (LBP) DURING CONSTRUCTION. CONTRACTOR MUST HOLD AWARENESS TRAINING AND REFERENCE OSHA 29 CFR 1926.62 AND 29 CFR 1910 IN WORKING WITH LCM INCLUDING PROPER HOUSEKEEPING AND PPE AND DISPOSAL AND WASTE CHARACTERIZATION REQUIREMENTS.

UNIVERSAL WASTE SUMMARY TABLE					
BUILDING WING	LIGHT FIXTURES (ASSUMED HAZ PCB BALLASTS)	LIGHT BULBS (ASSUMED MERCURY)	THERMOSTATS (ASSUMED MERCURY)	SMOKE DETECTORS	EMERGENCY LIGH
ELECTRICAL ROOM	4	8	1	1	0

TABLE NOTES:

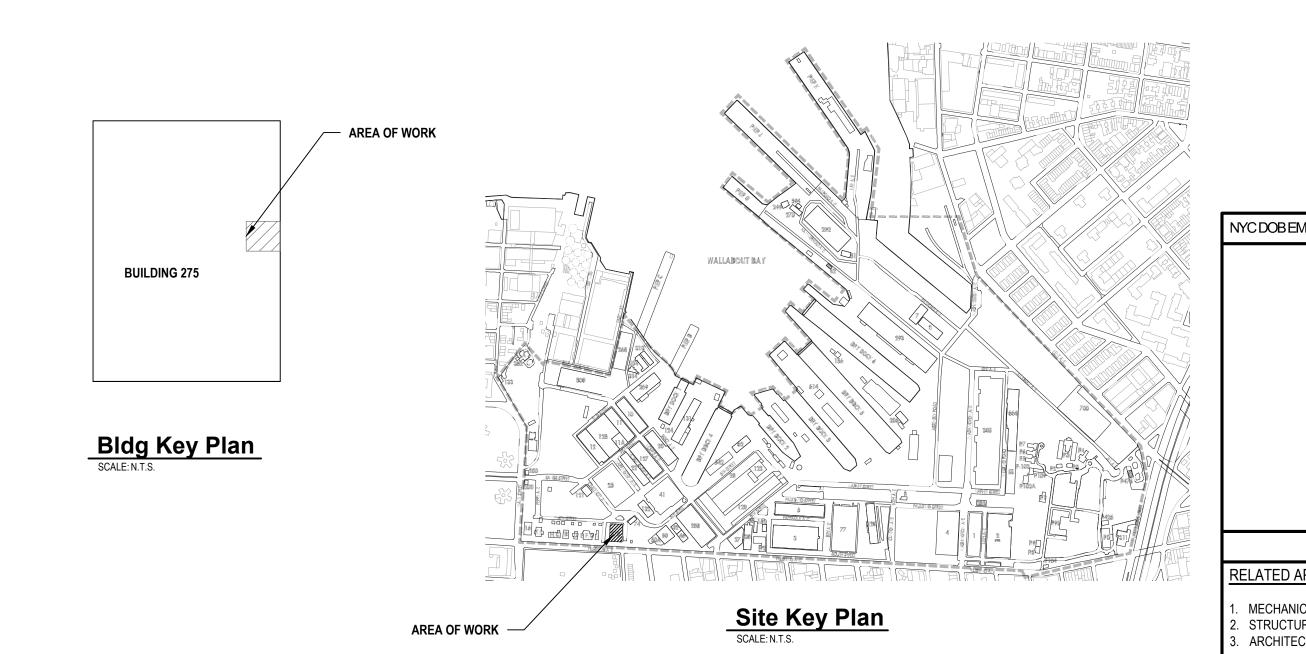
1. BALLASTS COULD NOT BE OPENED AND INSPECTED, UNLESS THE EXISTING BALLAST INDICATE "NON-PCB" ON THEM THEY WILL BE CONSIDERED TO CONTAIN PCB DIELECTRIC FLUID IN HAZARDOUS WASTE LEVELS.

2. INCANDESCENT AND FLUORESCENT BULBS ARE ASSUMED TO CONTAIN MERCURY AND ARE TO BE RECYCLED IN ACCORDANCE WITH EPA, LOCAL WASTE DISPOSAL FACILITY REQUIREMENTS AND DOT TRANSPORTING REQUIREMENTS

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LIGHTS



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012500	PRODUCT SUBSTITUTION PROCEDURES
012900	PAYMENT PROCEDURES
012973	SCHEDULE OF VALUES
013100	PROJECT MANAGEMENT & COORDINATION
013119	PROGRESS MEETINGS
013216	CONSTRUCTION SCHEDULE
013223	SURVEYING
013233	CONSTRUCTION PHOTOGRAPHS
013300	SUBMITTAL PROCEDURES
014100	REGULATORY REQUIREMENTS
014320	PRE-INSTALLATION MEETINGS
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015000	TEMPORARY FACILITIES AND CONTROLS
015719	TEMPORARY ENVIRONMENTAL CONTROLS
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016500	PRODUCT DELIVERY, STORAGE AND HANDLING
017001	MAINTENANCE OF BUILDING OPERATIONS
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- 017500 STARTING AND ADJUSTING
- 017800 CLOSEOUT SUBMITTALS
- 017823 OPERATING AND MAINTENANCE DATA
- 017839 PROJECT RECORD DOCUMENTS
- 017843 SPARE PARTS
- 017900 DEMONSTRATION AND TRAINING

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028304	HANDLING OF LEAD CONTAINING MATERIALS
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	EQUIPMENT
028600	DISPOSAL OF HAZARDOUS WASTE
028700	REMOVAL AND DISPOSAL OF UNIVERSAL WASTE AND
	FLUORESCENT LAMPS

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033000

CAST-IN PLACE CONCRETE

DIVISION 05 – METALS

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053100	STEEL DECKING
054000	COLD-FORMED METAL FRAMING
055100	METAL STAIRS
055213	PIPE AND TUBE RAILINGS
055216	METAL EGRESS BARRIER GATES

DIVISION 07 - THERMAL AND MOISTURE PROTECTION

079200 JOINT SEALANTS

DIVISION 08 - OPENINGS

081113HOLLOW METAL DOORS AND FRAMES087100DOOR HARDWARE

DIVISION 09 – FINISHES

099100 PAINTING

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230015	MECHANICAL DEMOLITION
230993	SEQUENCE OF OPERATIONS
233416	EXHAUST FANS
238239	ELECTRIC HEATERS

DIVISION 26 - ELECTRICAL

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200010	CABLES
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260529	HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS
260533	RACEWAYS AND BOXES FOR ELECTRICAL SYSTEMS
260553	IDENTIFICATION FOR ELECTRICAL SYSTEMS
260574	ARC FLASH HAZARD ANALYSIS AND SHORT CIRCUIT
	COORDINATION STUDY
261823	SURGE PROTECTION
262200	LOW VOLTAGE TRANSFORMERS
262400	PANELBOARDS
262413	LOW VOLTAGE SWITCHBOARD
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262816	ENCLOSED SWITCHES AND CIRCUIT BREAKERS
265000	LIGHTING
267174	TEMPORARY ELECTRICAL SERVICE AND CONTROLS

APPENDIX

APPENDIX 1 ENVIRONMENTAL REPORT

1.01 BRIEF PURPOSE OF PROJECT - GENERAL

- A. The Brooklyn Navy Yard Development Corporation is proceeding with repair damage from Hurricane Sandy and mitigation efforts against future flood-related losses at utility substations and boilers in the Brooklyn Navy Yard. To that end, Building 275 within the Brooklyn Navy Yard is to be addressed with following general scope of work:
 - 1. Electrical:
 - a. Provide a temporary 120/208V outdoor rated switchgear for all the 120/208V loads that are currently connected to the existing switchgear;
 - b. Remove the existing 120/208V switchgear and replace with new 120/208V front access only switchboard;
 - c. Remove and relocate existing 225kVA 120/208-480V step-up transformer to elevator room;
 - d. Remove and replaceexisting metering equipment and low voltage disconnects;
 - e. Remove and replace two (2) existing 120/208V distribution panels;
 - f. Existing 120/208V feeder shall be pulled back to nearest junction box. Feeds will be spliced, extended, and routed through the interior of Building 275 to new switchboard location;
 - g. Provide all new switchboard and associated electrical equipment for building 275 within the new elevated location (see structural narrative for additional details). The new substation equipment includes but is not limited to the following: 120/208V switchboard rated for 4000A, two (2) 120/208V distribution panelboards. Three (3) sub-feed metering units;
 - h. 120/208V switchboard shall be furnished with ten (10) breakers, two (2) shall be spare breakers, and eight (8) shall individually feed the following: five (5) distribution panels, Building 132, Admiral Flows Building, and an elevator step-up transformer;
 - i. Install new 225kVA 120/208V to 480V step up transformer on the penthouse level of building 275 and re-feed existing elevator equipment;
 - j. The feeders associated with all the switchboard branch breakers shall be spliced, extended, and outed within the footprint of Building 275 to the elevated switchboard;
 - 2. Mechanical:
 - a. Provide new ceiling mounted, electric unit heater in the switchboard room;
 - b. Provide new room exhaust fans with interlocked mechanical louvers.
 - 3. Architectural:
 - a. Replace the existing single entry-door to the switchgear room with an equivalent flood rated door;
 - b. Provide service stair to new slab/platform;
 - 4. Structural:
 - a. Construct a new interior platform attached to the existing concrete walls and access stairs inside the existing building. Placement of platform will be dependent upon height of electrical equipment.
 - b. Support columns in the basement have been identified as being corroded. Reinforcement/replacement will be required.

1.02 NOMENCLATURE

- A. Where the terms "Engineer/Architect" or "Architect/Engineer" are used throughout these Contract Documents, they shall mean the firm of H2M architects + engineers as may be abbreviated by H2M.
- B. The terms "Contractor" and/or "Prime Contractor" where used shall refer to the individual or company who has entered into an agreement with the Owner to perform the work contained within these Contract Documents. The lack of word capitalization shall be incidental.

C. The Contractor may be referred to as the "General Contractor", "Prime Contractor" or similar wording. The lack of word capitalization shall be incidental.

1.03 ABBREVIATED SUMMARY OF WORK

- A. Furnish all labor, equipment, materials, tools, means, methods, and incidentals necessary to complete the Work as required by the Contract Documents for this Construction Contract.
- B. The work included is as shown on the Contract Plans and as outlined in the technical specifications.
- C. All other work shown and specified within the Contract Documents.

1.04 PARTIAL LISTING OF SPECIFIC CONTRACT REQUIREMENTS

- A. The Contract Documents detail the work included in the Contract. Related requirements and conditions covered by the Contract Documents include, but is not limited to, the following:
 - 1. Guidelines and requirements of the New York City Department of Environmental Protection (NYCDEP) and Occupational Safety & Health Administration (OSHA).
 - 2. Coordination with Department of Buildings to obtain required permits and permit inspections.
 - 3. Local laws and ordinances of the City of New York and the Brooklyn Navy Yard Development Corporation.
 - 4. Guidelines and requirements of OSHA.

1.05 PARTIAL LISTING OF OVERALL CONTRACT REQUIREMENTS

- A. The Contract Documents detail the work included in the Contract. Related requirements and conditions covered by the Contract Documents include, but is not limited to, the following:
 - Coordination with the Brooklyn Navy Yard Development Corporation and local consumers (tenants) regarding the interruption of electrical service and subsequent shut-downs of existing electrical;
 - 2. Coordination with utility companies necessary to schedule utility mark-out services and in the event of damage to existing facilities;
 - 3. Coordination with the Brooklyn Navy Yard Development Corporation and the Engineer during testing operations;
 - 4. Coordination with the NYC Electrical Advisory Board (NYCEAB);
 - 5. Coordination with the Brooklyn Navy Yard Development Corporation, the Engineer, the Special Inspector, the Department of Buildings to obtain required permits and permit inspections.
 - 6. Site safety in accordance with all applicable federal, state, and local regulations.

1.06 EXISTING CONDITIONS

- A. The Drawings show certain information that has been obtained by the Owner and various utilities regarding the location of various pipelines, utilities, and structures that exist at the location of the project both below and above grade.
- B. The Owner and the Engineer/Architect expressly disclaims all responsibility for the accuracy or completeness of the information given on the Drawings with regard to existing facilities.
- C. In the case where the Contractor discovers an obstruction not indicated on the Drawings or not described via specification reference, then the Contractor shall immediately notify the Engineer/Architect of the obstructions' existence.

- D. The Engineer/Architect will determine if the obstruction is to be relocated or removed.
- E. Compensation for this extra work will be paid for in accordance with the provisions in the Contract for "EXTRA WORK".

PART 2 - PRODUCTS

2.01 NOT USED

PART 3 - EXECUTION

3.01 NOT USED

END OF SECTION

1.01 SECTION INCLUDES

- A. Site access and control of areas outside of site.
- B. Work hours, employee conduct and miscellaneous employee requirements.
- C. Contract requirements related to maintaining Owner's current operations and excess inspection required.

1.02 SITE ACCESS AND CONTROL

- A. The Contractor shall not close any road for any period in time unless approved ahead of time by the Brooklyn Navy Yard Development Corporation. The Contractor shall take whatever measures are necessary to not cause any inconvenience to the area's residents.
- B. The Contractor is responsible to employ methods to prevent construction materials and/or debris from leaving the work areas. The Contractor is responsible to routinely monitor the areas surrounding the site during the day as well as at the end of the work-day and to immediately clean-up any area to its previous condition.
- C. The Contractor shall employ methods to prevent the transmission of dirt from vehicles driving on exposed areas of the work area from reaching the surrounding roadways. The Contractor will be responsible to immediately clean the roadway, should the measures being taken by the Contractor not satisfactorily control the transmission of any dirt to the roadway.
- D. Any damages to areas outside the site, spills of soil, liquid, or any other material shall immediately be repaired, cleaned and restored to its previous condition.
- E. The Contractor shall comply with all state and local requirements for allowable weight limits of vehicles on all public roads and the requirements of the BNYDC upon their roads.
- F. The Owner reserves the right to back charge the Contractor for all costs associated with maintaining areas outside the work area, which may be disturbed by the Contractor should the Contractor fail to maintain or repair the aforementioned in a condition acceptable to the Owner.
- G. The Contractor shall maintain the premises in a safe condition throughout the construction period. Compliance with OSHA regulations and site safety shall be the responsibility of the Contractor as it relates to work of the Contract. The posting of all applicable OSHA safety signs shall be the responsibility of the Contractor.
- H. Contractor shall be responsible for protecting private property. All existing buildings, structures, shrubs, trees, lawn fixtures, sculptures and misc. equipment shall be protected at all times. Any removals or relocation of said objects, if allowed shall be as directed by the Engineer or Brooklyn Navy Yard Development Corporation. Contractor shall protect all of the physical structures, property and improvements from damage by their Work and shall immediately repair or replace damage caused by construction operations, employees or equipment employed by the Contractor. All labor, materials and equipment and outside contractors that are employed by the Owner to repair damage caused by the Contractor shall be billed to the Contractor directly or withheld from money due the Contractor for work already completed.
- I. Keep all existing driveways, roads, and parking areas free and clear of materials and equipment. Do not unreasonably encumber the work area with materials and equipment.
- J. Immediately remove excess excavated material or relocate to areas on the site requiring placement of fill. Do not stockpile excess material.

- K. The Contractor is responsible for cleaning up the work area. Failure to maintain a clean work site daily, will result in others performing the work and the contractor being back charged for the cleaning cost plus construction administration fees.
- L. Do not discard or dispose of any waste on-site.
- M. The Contractor shall be responsible for managing dust.
- 1.03 WORK HOURS, EMPLOYEE CONDUCT AND EMPLOYEE REQUIREMENTS
 - A. The Contractor will be permitted to schedule working days and hours as specified in the Contract, if no times are specified therein then the work hours shall be Monday Friday 7:00 am to 3:00 pm unless otherwise noted on the contract plans or applicable permits.
 - B. Employees are to act in a professional manner. Any employee using inappropriate language or who is disruptive to the work environment will be banned from the site. Proper work attire is required. Shirts are to be worn at all times and no short pants are permitted.
 - C. Any employee found under the influence of any drug or alcohol will be banned from the site.
- 1.04 CONTRACT REQUIREMENTS RELATED TO MAINTAINING OWNER'S CURRENT OPERATIONS AND EXCESS INSPECTION REQUIRED
 - A. The Contractor shall schedule working days and hours as specified. The Contractor shall pay all excess costs for inspection services provided by the Owner/Engineer/Architect for working beyond the times specified.

PART 2 - PRODUCTS

2.01 NOT USED

PART 3 - EXECUTION

3.01 NOT USED

END OF SECTION

1.01 SECTION INCLUDES

- A. Allowance pricing for the following items:
 - 1. Independent Laboratory Testing Allowance
 - 2. Contingency Allowance for Additional Work
- B. This Section covers the requirements for use of the cash allowances listed above contained in the proposal (Bid Forms, Price Schedule) and included in the Contract Price bid by the Contractor and defines and stipulates the charges that will be paid for out of the stipulated allowances.
- C. The Contractor shall include the cash allowances stipulated in this Section in the amount bid (Base Bid).
- D. Eligible costs described in this Section, and Sections referenced herein, will be the only costs paid for out of the stipulated allowances.
- E. All other costs associated with the project as specified and/or shown, including but not limited to the delivery, installation and all Contractor overhead and/or collateral expenses are to be distributed among the other portions of the work and shall be included in the lump sum base bid.

1.02 SUBMITTALS

- A. Make all submissions under the provisions of Section 013300.
- B. For each type of product/material specified to be furnished under allowance pricing provide documentation of the unit pricing on manufacturer's letterhead certifying pricing of the product/material.
- C. Submit additional backup information to substantiate the invoiced amount(s) as the Engineer/Architect may require for review and approval, prior to order or payment of item.
- D. Provide written breakdowns for extra work as the Owner may require.

1.03 CHANGES TO STIPULATED (CASH) ALLOWANCE

A. If the actual cost of services differs from the cash allowance, then the Contract Price will be adjusted accordingly.

1.04 PAYMENTS TO BE MADE OUT OF TESTING ALLOWANCE

- A. Include the cash allowance of \$20,000.00 (TWENTY thousand Dollars and Zero Cents) in the amount bid for independent testing laboratory services specified in Section 014500.
- B. The actual invoiced charges of the testing laboratory, including toning companies where called for, incurred for field and laboratory tests, as specified only in Section 014500 Quality Control, shall be paid for out of the cash allowance.
 - 1. Any other requirement specified herein throughout these specifications for providing the services of an independent testing laboratory, underground utility location company, or similar outside independent service are to be borne by the Contractor.
 - 2. All costs for quality control services are to be included as part of the Contract Price (Base bid).

- C. One (1) week prior to each partial payment, submit a certified invoice from each company listing and detailing the total costs incurred since the last invoice.
 - 1. The invoice shall be on company letterhead signed by an authorized representative of the company and shall include man-hours, tests conducted, date of tests and associated costs and fees.
 - 2. Payment for costs will not be made unless the information is provided and certified. Payment for costs will not be made unless the typed test data reports have been received by the Engineer.
 - 3. In the case of pipe toning, flags must be set to delineate the route of underground pipes and utilities prior to submission of partial payment request.
- D. If in the event test results (provided by the independent testing laboratory) show non-compliance with these specifications, then at the option of the Contractor and only with the approval of the Owner, he may re-test samples to verify the original test results at his/her own expense.
- E. Costs for re-testing failed components of the work, when ordered by the Engineer/Architect, will not be paid for out of the cash allowance and will be directly borne by the Contractor.
- F. Funds remaining at project closeout shall be credited to the Owner.
- G. Include allowance in lump sum amount in proposal statement. Show as separate line item in Schedule of Values.
- 1.05 PAYMENTS TO BE MADE OUT OF CONTINGENCY ALLOWANCE FOR ADDITIONAL WORK
 - A. Include the cash allowance of \$50,000.00 (FIFTY thousand Dollars and Zero Cents) in the amount bid for use upon the Owner's instructions.
 - B. Should any additional work be required due to unforeseen conditions or Owner requests, the cost shall be negotiated by the Engineer and paid for out of the allowance. Include allowance in lump sum amount in proposal statement. Show as separate line item in Schedule of Values.
 - C. One (1) week prior to each partial payment, submit a certified invoice listing and detailing the total costs incurred since the last invoice. The invoice shall be on company letterhead signed by an authorized representative of the company and shall include man-hours, work conducted, date of work and associated costs and fees.
 - D. Funds remaining at project closeout shall be credited to the Owner.

PART 2 - PRODUCTS

- 2.01 NOT USED
- PART 3 EXECUTION

3.01 NOT USED END OF SECTION

1.01 SECTION INCLUDES

- A. This Section includes the requirements for substitution of specified products during construction.
- B. The Architect/Engineer will consider requests for substitutions only within <u>thirty (30)</u> days from the date of the Notice to Proceed.
- C. The Architect will consider requests for substitutions only within <u>two (2)</u> business days following the Bid Opening.
- D. Only products not specifically named in the bid are eligible for substitution in accordance with the requirements contained herein these specifications.
- E. Products named by the Bidder, at the time of bid, shall be furnished and installed and substitutions will not be considered by the Owner/Architect/Engineer for those products named in the bid.

1.02 CONTRACTOR'S OPTIONS

- A. For products specified only by reference standard, select any product meeting that standard.
- B. For products specified by naming several products or manufacturers, select any one of the products or manufacturers named which complies with the Specifications.
- C. Where products are not named, then submit products that meet the specifications.

PART 2 - PRODUCTS

2.01 SUBSTITUTIONS

- A. <u>Name</u> The Drawings and Specifications list acceptable manufacturers, commercial names, trademarks, brands and other product, material and equipment designations. Such names are provided to establish the required type, quality and other salient requirements of procurement.
- B. <u>Equals</u> An item equal to that named or described on the Drawings or in the Specifications may be provided by Contractor if accepted by the Architect/Engineer.
- C. A request for product substitution constitutes a representation that the Contractor:
 - 1. Has investigated proposed Product and determined that it meets or exceeds the quality level of the specified Product.
 - 2. Shall provide the same warranty for the Substitution as for the specified Product.
 - 3. Shall coordinate installation and make changes to other Work that may be required for the Work to be complete with no additional cost to Owner, including extra charges by other Prime Contractors, material suppliers, and vendors.
 - 4. Waives claims for additional costs or time extension that may subsequently become apparent.
 - 5. Shall reimburse the Owner and the Architect/Engineer for review or redesign services associated with re-approval by authorities.
 - 6. Shall reimburse the Owner for all additional engineering services claimed by the Architect/Engineer for extra services associated with the review of the Contractor's substituted item since it could not have been originally included in the Architect/Engineer's professional engineering services agreement. Reimbursement shall be based on the man-hours expended, at current billing rates.

- D. Substitutions will not be considered when they are indicated or implied on shop drawing or product data submittals, without separate written request, or when acceptance will require revision to the Contract Documents.
- E. <u>Substitution Submittal Procedure:</u>
 - 1. The Contractor shall submit three (3) copies of the <u>REQUEST FOR SUBSTITUTION</u> <u>FORM</u> for consideration including all required information.
 - 2. The Contractor shall use the form included within this Section.
 - 3. All forms shall be type written.
 - 4. Submit shop drawings, product data, and certified test results attesting to the proposed product equivalence.
- F. The burden to prove product equivalence rests on the Contractor.
- G. The Architect/Engineer will notify Contractor in writing of decision to accept or reject request and at that time the Contractor can make a formal submittal in accordance with the requirements contained in Section 013300.
- H. Substitutions may be considered when a product becomes unavailable through no fault of the Contractor.

PART 3 - EXECUTION

NOT USED

REQUEST FOR SUBSTITUTION FORM

Project: <u>Restoration of Substation at Building</u> 275	Substitution Request Number:
Contractor:	
Address:	
То:	Date:
H2M Project Number: <u>BNYD 1901A</u>	Owner: <u>Brooklyn Navy Yard Development</u> Corporation
Contract Name:	Contract No.:
Specification Title:	
Section: Page:	Article/Paragraph:
Drawing No(s).:	
Proposed Substitution:	
Manufacturer:	Address:
Trade Name:	Phone #: ()
Installer:	Address:
Phone #: ()	
History:New product2-5 years old	5-10 years oldMore than 10 years old
Differences between proposed substitution and	specified product:

____Point-by-point comparative data attached

Reason for not providing specified item (Attach separate sheet if necessary):

Typical Similar Installation:

Project:		
Engineer / Architect:		
Address:		
Owner:		
Date Installed:		
Submit complete installation list on separate sheets.		
Proposed substitution affects other parts of Work:NoYes		
Explain:		
Gross Savings to Owner for accepting substitution: \$		
Proposed substitution changes Contract Time:NoYes		
Add / deduct (circle): days		
Supporting data attached for evaluation of the proposed substitution:		
Product DataPhotosDrawingsTestsReportsSamples		
Other (explain):		

Attached data includes description, specifications, drawings, photographs, performance and test data adequate for evaluation of request; applicable portions of data are clearly identified.

Attached data also includes a description of changes to Contract Documents that proposed substitution will require for its proper installation.

The undersigned certifies that the following paragraphs, unless modified by attachments, are correct:

- 1. Proposed Substitution has been fully checked and coordinated with Contract Documents.
- 2. Proposed Substitution does not affect dimensions shown on Drawings.
- 3. Proposed Substitution does not require revisions to any other Prime Contractor's work.
- 4. The undersigned will pay for changes to building design, including Architectural and Engineering design, detailing, and construction costs caused by requested Substitution.
- 5. Proposed Substitution will have no adverse affect on other trades, construction schedule, or specified warranty requirements.
- 6. Maintenance and service parts will be locally available for proposed substitution.
- 7. The undersigned further states that the function, appearance, and quality of proposed Substitution are equivalent or superior to specified item.

This request for product substitution also constitutes a representation that I, as the Contractor:

- 1. Has investigated proposed Product and determined that it meets or exceeds the quality of the specified Product.
- 2. Shall provide the same warranty for the Substitution as for the specified Product.
- 3. Shall coordinate installation and make changes to other Work that may be required for the Work to be complete with no additional cost to Owner, including extra charges by other Prime Contractors, material suppliers, and vendors.
- 4. Waives claims for additional costs or time extension that may subsequently become apparent.
- 5. Shall reimburse the Owner and the Architect/Engineer for review or redesign services associated with re-approval by authorities.
- 6. Shall reimburse the Owner for all additional engineering services claimed by the Architect/Engineer for extra services associated with the review of the Contractor's substituted item since it could not have been originally included in the Architect/Engineer's professional engineering services agreement. Reimbursement shall be based on the man-hours expended, at current billing rates.

Contractor's Authorized Representative (Typewritten):

Authorized Signature:_____

Date:_____

END OF SECTION

1.01 DESCRIPTION

A. Work under this Section specifies the procedures used to process partial payments

1.02 APPLICATIONS FOR PAYMENT

- A. The form of application for payment shall be AIA Document G702, application and certificate for payment supported by AIA Document G703, Continuation Sheet.
- B. Submit one (1) copy of each payment application, completed, signed and notarized.
- C. Submit one (1) copy of the Brooklyn Navy Yard Development Corporation voucher or other required documentation.
- D. Submit certified payroll receipts for all works and subcontractors. Payroll receipts shall be submitted with every application for payment. All payroll receipts shall be certified correct and notarized by a Notary in the State of New York. Application for Payment will not be processed unless all payroll receipts are received.
- E. Applications must be filled out in Construction Management's chosen platform for payment.
- F. The Brooklyn Navy Yard Development Corporation will not pay for any stored materials and equipment that is not installed.
- G. Contractor shall pay all workers and have all subcontractors pay all workers the prevailing New York State Dept. of Labor wage rates.
- H. The Brooklyn Navy Yard Development Corporation may conduct on-site interviews with all workers to verify payment of prevailing wage rates is enforced.

PART 2 - PRODUCTS

2.01 NOT USED

PART 3 - EXECUTION

3.01 NOT USED

END OF SECTION

1.01 SECTION INCLUDES

A. Schedule of Values

1.02 SCHEDULE OF VALUES

- A. Submit for approval prior to the start of the work a Schedule of Values that indicates a breakdown of the labor, materials and equipment and other costs used in the preparation of the bid. This schedule shall be in sufficient detail to indicate separate figures for such items as excavation, concrete, equipment and all other items making up the lump sum price. The cost breakdown shall be separately itemized for each lump sum bid item in the project.
- B. Where the cost breakdown includes items for bond payment, insurance payment, job set-up, or job mobilization, these items will be paid based on paid invoices and copies of cancelled checks.
- C. Submit a Schedule of Values to the Engineer/Architect for review and approval within fifteen (15) calendar days from the date shown on the Notice to Proceed.

1.03 FORM OF SUBMITTAL

- A. Submit typewritten Contract Cost Breakdown on AIA Form G703 Application and Certificate for Payment Continuation Sheet or EJCDC 1910-8-E. The Engineer reserves the right to revise the form or provide a form prepared by the Engineer.
- B. Use the Table of Contents of the Contract Specifications as a basis for format for listing costs of work for Sections under Divisions 1-48 as sections apply to work. Not all Sections need be assigned a breakout price as determined by the Engineer/Architect.
- C. Identify each line item with number and title as listed in Table of Contents.
- D. Provide dollar values for each line item for labor, overhead, profit, material, and equipment components for each category of work if requested by the Engineer.
- E. List quantities of materials specified under unit price allowances.
- F. The Schedule of Values, after approval by the Engineer/Architect, shall be the basis for the Contractor's Application for Payment and shall be entered into Cosntruction Management's chosen platform for the Contractor's Application of Payment.
- G. The first Application for Payment will not be reviewed prior to an approved breakdown.

1.04 PREPARATION OF SCHEDULE OF VALUES

- A. In addition to the above, provide a separate line item cost for each of the following items which shall be supported by proof where requested by Architect/Engineer:
 - 1. Performance and payment bonds.
 - 2. Insurance.
 - 3. Mobilization and Demobilization (Amounts shall be equal in value).
 - 4. Temporary facilities and measures as specified in Section 015000.
 - 5. Project Coordination Meetings as specified in Section 013100.
 - 6. Preparation of the Project Construction Schedule, and updates, as specified in Section 013300.
 - 7. Preparation of Monthly Schedules as specified in Section 013100

- 8. Rubbish removal and daily cleaning up. (Provide a total dollar amount and a daily rate for each calendar day during the contract period.)
- 9. All Cash Allowance items as contained in Section 012100.
- 10. On-site, full time superintendent starting on the date of the Notice To Proceed and ending on the date that all punch list items are completed, which for the purposes of the Schedule of Values, shall be the contract completion date.
- 11. Surveyor used for layout, if necessary.
- 12. A total dollar amount for furnishing all the Operations and Maintenance Manuals specified throughout the specifications.
- 13. Record Drawing retainage amount specified in Section 017839.
- 14. Final cleaning.
- B. Show total costs including overhead and profit.
- C. Provide additional details and data to substantiate the cost breakdown as requested by the Engineer.

PART 2 - PRODUCTS

2.01 NOT USED

PART 3 - EXECUTION

3.01 NOT USED

END OF SECTION

1.01 SECTION INCLUDES

- A. Work of this Section includes:
 - 1. Requests for Interpretation or for information
 - 2. Administration of subcontracts
 - 3. Coordination of work with utility companies, Owner and the Engineer/Architect
 - 4. Communication and coordination requirements
- B. Site staffing requirements for the Contractor's superintendent is also specified herein, the costs for which shall be included in the Contract price.

1.02 FOR INTERPRETATION OR INFORMATION

- A. The Contractor shall contact the Engineer when the Contractor feels that additional information is needed to perform the work of the Contract.
- B. The Engineer/Architect's verbal response(s) to the Contractor's formal requests, if provided, shall not constitute an official response and if acted upon by the Contractor are done so at the Contractor's own risk and liability and shall not be subject to claims for additional compensation.
- C. The Engineer/Architect will respond in writing to the request as soon as possible.

1.03 SUBCONTRACTOR ADMINISTRATION AND COORDINATION

- A. Terms and conditions of the Contract shall be binding upon each subcontractor.
- B. Provide at least one (1) copy of each approved shop drawing to each subcontractor whose work may depend upon the contents of the shop drawing submittal. The Owner reserves the right to stop all work, without claims for delay, until such time as appropriate subcontractors are furnished with appropriate shop drawings.
- C. Each Contractor shall sequence and schedule the work of subcontractors, coordinate construction and administration activities of subcontractors. Subcontractor and vendor questions and clarifications shall be directed to the Engineer by the Contractor.
- D. The Contractor's on-site project superintendent shall inspect all the work of all of his/her subcontractors, as it is being constructed. The Contractor's subcontractor shall not be permitted to do any work on the site without the Contractor's job site superintendent also being there to inspect the work as it is being performed.

1.04 UTILITY COORDINATION

- A. Comply with the requirements of 16 NYCRR Part 753 Protection of Underground Facilities. Submit a letter stating the case number.
- B. Comply with the utility coordination requirements contained in the General Notes.

1.05 PUBLIC/PRIVATE UTILITIES

A. Notify all public and private utilities in accordance with Article 20, Section 322-a of the New York State General Business Law for location and mark-out of existing utilities in the vicinity of the work.

B. Repair all utilities damaged during the Work to the standards and approval of the respective utility at no cost to the Owner.

1.06 SPECIFIC COORDINATION REQUIREMENTS

- A. Sequence and schedule work so as not to interfere with the work by others. Coordinate the work of this Contract with the work by others. In case of conflicts due to improper coordination by the Contractor, the Owner/Engineer's resolution will be final. No compensation will be awarded for extra work required to resolve conflicts.
- B. Follow routing shown for pipes and conduit as closely as practicable. Place runs parallel with curb lines. Utilize spaces efficiently to maximize accessibility for other installations, maintenance, and to facilitate repairs.

1.07 CONTRACTOR'S JOB SITE SUPERINTENDENT

- A. Employ an on-site superintendent as specified herein below. He/She shall be a full-time employee of the Contractor.
- B. He/She shall have the authority to sequence and schedule the work, and to staff the project, so as not to interfere with the work by others and to complete the work daily within the time so required.
- C. Each Superintendent shall have a minimum of five (5) years of experience as a job site superintendent for projects of equal size and complexity.
- D. The Superintendent shall be qualified to perform the duties so required to successfully complete the work in accordance with the Contract Documents.
- E. The Superintendent shall speak English. If required by the Engineer, provide a resume for the proposed superintendent that shall be typed and shall list the qualifications of the superintendent. The Contractor shall employ a superintendent acceptable to the Owner.

PART 2 - PRODUCTS

2.01 NOT USED

PART 3 - EXECUTION

3.01 NOT USED END OF SECTION

BNYD 1901A

1.01 SECTION INCLUDES

A. Work of this Section includes the requirements for progress meetings.

1.02 PRE-CONSTRUCTION CONFERENCE

- A. The Contractor is required to attend the pre-construction conference at a location, date, and time selected by the Owner.
- B. The owner, a partner, or a corporate officer representing the Contractor shall attend the conference. The job site superintendent and office project manager for the Contractor shall also attend.
- C. The Engineer will prepare an agenda for the conference.

1.03 PROGRESS MEETINGS

- A. Progress meetings will be held approximately once every two (2) weeks during the project. The Owner may elect to hold meetings more or less frequently.
- B. At least seven (7) calendar days advance notice will be given by the Engineer or the date for the upcoming meeting will be set during the progress meeting.
- C. Attendance at progress meetings shall be mandatory for all Contractors. An amount of \$500 shall be deducted from the Contract Amount for each announced meeting not attended by the Contractor.
- D. The job site superintendent and/or office project manager for the Contractor shall attend.
- E. Subcontractors shall attend when requested by the Owner or Engineer at no cost to the Owner.
- F. Meetings will be conducted by Engineer at a location selected by the Owner, normally at or adjacent to the project site.
- G. The minimum agenda will cover:
 - 1. Review minutes of previous meetings.
 - 2. Identify present problems and resolve them.
 - 3. Plan work progress during next work period.
 - 4. Review the status of off-site fabrication and delivery schedule.
 - 5. Review shop drawings and submittal schedules.
 - 6. Review change order status.
 - 7. Review status of construction progress schedule.
 - 8. Coordinate access requirements.
 - 9. Other business related to the work.

1.04 OTHER MEETINGS

A. Attend special meetings which may be required or called for by federal, state or local authorities, utility companies, Owner, Engineer or any other firm, person, or organization related to the project.

1.05 CONDUCTING MEETINGS

- A. General This paragraph covers Owner and/or Engineer meetings with Contractor and/or his subcontractors. Neither Owner nor Engineer wishes to meet solely with a subcontractor and requests for such meetings will be discouraged. If a meeting is deemed necessary, every effort will be made to have Contractor attend. If, for some reason, circumstances do not allow such, the meeting may be held, minutes of the meeting will be sent to Contractor and decisions on any major questions will be reserved until contractor has been consulted. Subcontractors may accompany Contractor to meetings provided contractor notifies Engineer in advance.
- B. Chairman When Engineer or Engineer and Owner attend meetings, Engineer, or his duly authorized representative, will act as chairman. Should Owner-Contractor meetings be necessary, Owner will chair such meetings.
- C. Notices Engineer or Owner will issue notices of meetings to all parties concerned and will note, thereof, who must attend and who may attend if they so desire. When Contractor desires a formal meeting, make a request through Engineer. Except when Engineer determines that a prompt meeting is essential, all notices will be issued at least one week in advance of the meeting date.
- D. Agenda All parties shall inform Engineer of items desired to be discussed and Engineer will notify all parties of all items to be considered. This is to allow each party to fully prepare for the meeting. This shall not be construed to mean that other items cannot be brought up at the meetings.
- E. Time Limits It is the intent to hold productive and efficient meetings and to keep them as short as is reasonably possible. The Chairman will be the sole judge as to whether or not further discussion on any matter is warranted and all discussions shall cease when he so orders.
- F. Minutes Minutes of meetings will be kept, written and distributed by the Chairman or his duly authorized representative. Minutes of all meetings will be available upon request to the Chairman.
- G. Conduct It is the intent to conduct all meetings in an orderly manner, to reasonably discuss all items and to hear and observe the rights and opinions of all parties. The Chairman will allow each party to speak, however, he reserves the right to order any individual to leave the meeting at any time for any reason.

PART 2 - PRODUCTS

2.01 NOT USED

PART 3 - EXECUTION

3.01 NOT USED END OF SECTION

1.01 SECTION INCLUDES

- A. This Section specifies the requirements for preparing construction schedules and for keeping them up to date.
- B. All schedules shall be submitted in accordance with the requirements contained herein in Section 013300.
- C. Refer to Section 013100 regarding the requirements for attendance at Project Coordination Meetings and additional requirements concerning the submission of other project coordination and sequencing information.

1.02 SCHEDULE PREPARATION MILESTONE DATES & REQUIREMENTS

- A. The Contractor shall prepare Draft #1 Construction Schedule for presentation and discussion during the Bid Phase submission.
 - 1. The Engineer/Architect will provide at least seven (7) calendar days written notice regarding the date of the first Project Coordination Meeting.
 - 2. At the Engineer/Architect's discretion, after Award, Project Coordination Meeting No. 1 may immediately take place on the same date and directly following the Pre-Construction Conference. The Notice To Proceed will contain information regarding the Pre-Construction Conference and Project Coordination Meeting No. 1 should it be so decided by the Engineer.
 - 3. Draft #1 Construction Schedule shall be prepared as specified hereinafter.
 - a. The schedule shall show all the major and subordinate tasks necessary to complete the project in the specified time and interim milestones.
 - b. It being understood that the Contractor's allotted time for others to perform their work is non-binding and does not relieve the Contractor from completing all the work in the specified contract completion time in accordance with the Contract Documents. It also being understood that this is the Contractor's realistic best estimate of the time needed for others to complete their related work.
 - c. The schedule shall also show the dependencies and time allocated for each task.
 - 4. The date, place, and time for Project Coordination Meeting No. 2 shall be established at the first meeting, but in no case be more than ten (10) calendar days from the date of the first meeting.
- B. As a result of the first meeting, a better understanding of the Contractor's time requirements will have been achieved. Within five (5) working days of the date of Project Coordination Meeting No. 1, the Contractor shall prepare Draft #2 Construction Schedule and submit it to the Engineer/Architect for review. The Contractor shall mail his/her schedule via Overnight Mail with a Return Receipt Requested.
 - 1. Project Coordination Meeting No. 2 shall focus on the time needed to complete each task and subordinate task and for establishing task dependencies.
 - 2. The Contractor shall deliver to the Engineer a hard copy of his/her Draft #2 Construction Schedule at the meeting.
- C. The Engineer/Architect's decision regarding the time allotted for a given task shall be final and each Contractor shall apply necessary resources to accomplish the work. Submission of a bid shall be intended to mean that the Contractor agrees that the determination is binding.
- D. Once revisions to the schedule have been made after Project Coordination Meeting No. 2, the agreed upon schedule shall become the Final Construction Schedule. The Contractor shall mail his/her Final Construction Schedule via Overnight Mail with a Return Receipt Requested.

1.03 PRIME CONTRACTORS SCHEDULE TYPES

A. Gantt Chart Type: The Contractor shall prepare a Gantt Chart type schedule as specified hereinafter.

1.04 CONSTRUCTION SCHEDULE - GENERAL

- A. Coordinate the work and maintain the construction schedule. In the event actual progress begins to lag the schedule, promptly employ additional means and methods of construction to make up the lost time.
- B. Keep the construction schedule current and revise and resubmit as often as necessary to accurately reflect the conditions of the work, past progress and anticipated future progress.
- C. The construction schedule shall be completed, submitted, and deemed received by the Engineer prior to the first payment application.
- D. The schedule, when approved by the Engineer/Architect and the Owner, shall establish the dates for starting and completing work for the various portions of the Contract. It shall be the duty of the Contractor to conform to his/her own schedule and to perform the work within the time limits indicated. Failure to adhere to the approved schedule shall expose the Contractor to disputes, claims and additional costs incurred by others.
- E. Coordinate letting of subcontracts, material purchases, shop drawing submissions, delivery of materials, and sequence of operations, to conform to the schedule.
- F. Coordinate the construction schedule with the proposed schedules of the equipment suppliers and subcontractors.
- G. The schedule shall be plotted out in color and shall be 36-inch by 40-inch. It shall contain as many sheets as are necessary to show all rolled down tasks. Partially printed schedules will not be accepted.
- H. Prepare the schedule in a manner so that the actual progress of the work can be recorded and compared with the expected progress.
- I. The schedule shall be Gantt Chart and use the following convention:
 - 1. Tasks for the General Contractor in blue ink.
 - 2. Task links/task dependency in blue ink.
 - 3. Work by others in green ink.
 - 4. Milestone dates (zero duration) by a red diamond.
 - 5. The end date for each task and subtask at the end of a bar.
 - 6. The description of all major tasks within the bar. The bar shall be red.
 - 7. Critical path.
- J. The construction schedule shall also show the following:
 - 1. Critical sequence items where new units must come on-line before existing facilities go off-line, if applicable to the project.
 - 2. Lead time for major manufactured systems and equipment.
- K. Project scheduling software shall be the latest version of Microsoft Project ®
- L. One licensed latest version of Microsoft Project ® shall be delivered to the Owner, which shall remain registered to the Owner after the project is completed.

M. The Contractor shall provide a two (2) week lookahead schedule prior to each Project Coordination Meeting for discussion.

1.05 REVISION OF PROJECT PROGRESS SCHEDULE

- A. The Contractor shall evaluate and provide updated construction schedules monthly in accordance with job requirements. Each update shall be submitted to the Engineer/Architect for information purposes and be provided by the last Friday of every month.
- B. From time to time, and at stages deemed appropriate by the Engineer/Architect, the Engineer/Architect may ask for updated schedules from the Contractor to reflect the project's status. The percent complete for each task may be shown for review by the Engineer/Architect.
- C. The Contractor shall provide

PART 2 - PRODUCTS

2.01 NOT USED

PART 3 - EXECUTION

3.01 NOT USED END OF SECTION

1.01 SECTION INCLUDES

A. Project record documents shall be prepared as specified herein.

1.02 QUALITY ASSURANCE

- A. The Contractor shall employ a land surveyor licensed in the State where the project is located. The surveyor shall be acceptable to the Architect/Engineer in terms of experience and qualifications.
 - 1. Submit evidence of the surveyor's errors and omissions (professional liability) insurance coverage in the form of an insurance certificate.
 - 2. The surveyor shall maintain a minimum coverage of \$1,000,000 for professional liability.
 - 3. The Owner, Architect/Engineer, and Contractor shall be named as insurance certificate holders.
 - 4. A thirty-day cancellation notice shall be provided.
 - 5. Physical work shall not be performed until the certificate is provided and approved by the Owner.
- B. All instruments used on the project shall be of professional quality and in first class condition.
 - 1. All instruments shall have been calibrated by a manufacturer's service station within the last twelve (12) months.

1.03 SUBMITTALS FOR REVIEW

- A. Submit name, address, and telephone number of Surveyor before starting survey work.
- B. Surveyor's professional liability insurance certificate.
- C. On request, submit documentation verifying accuracy of survey work.
- D. Submit a copy of the site drawing signed by the land surveyor showing locations of other benchmarks set by the surveyor, baseline location and offset hubs. If requested, the Architect/Engineer will provide a reproducible drawing or a drawing in digital format for use by the surveyor.

1.04 EXAMINATION

- A. Verify locations of survey control points prior to starting work.
- B. Promptly notify Engineer/Architect of any discrepancies discovered.

1.05 SURVEY REFERENCE POINTS

- A. The Contractor's surveyor shall locate and protect survey control and reference points located throughout the project site.
- B. Control datum for survey is that indicated on the Drawings or will be provided by the Architect/Engineer.
- C. The Contractor shall protect survey control points prior to starting any site work. Preserve permanent reference points during construction.
- D. Promptly report to the Engineer/Architect the loss or destruction of any reference point or relocation required because of changes in grades or other reasons.

- 2. Make no changes without prior written notice to Engineer/Architect.
- E. The surveyor shall set control lath for rough and final grading purposes. Lath shall be placed at sufficient intervals to control grade or as directed by the Engineer/Architect.
- F. All new structures, pits, chambers, drainage pools, curbs, roads, swales, and other physical elements shall be located by survey control.
- G. Underground pipelines need not be located using survey control but shall be located using standard survey equipment operated by persons experienced in their operation.

1.06 SURVEY REQUIREMENTS

- A. The Engineer/Architect will provide one (1) benchmark.
- B. The Contractor shall, with his own forces, obtain working or construction lines or grades as needed subject to the check of the surveyor. The surveyor shall set offsets.
- C. Establish elevations, lines, offsets and levels. Locate and lay out by instrumentation and similar appropriate means:
 - 1. Site improvements including pavements, stakes for grading, curbs, fill and topsoil placement, utility locations, slopes and invert elevations.
- D. The Contractor shall provide at least 48 hours notice and adequately protected access to all underground structures, valves, pipes, and utilities installed as work of this Contract to H2M prior to backfilling. Please contact H2M at least 48 hours in advance of backfilling. In the event the trench must be backfilled in less than 48 hours, the Contractor shall stake the junctions and termination points of the utility and note the depth to the top of the utility on the stake. Stakes must be protected for at least 48 hours until H2M survey can record the locations.

PART 2 - PRODUCTS

2.01 NOT USED

PART 3 - EXECUTION

3.01 NOT USED

1.01 SECTION INCLUDES

- A. Pre-construction photographs.
- B. Periodic construction photographs.
- C. Final completion construction photographs.

1.02 SUBMITTALS

- A. Key Plan: Submit key plan of Project site and building with notation of vantage points marked for location and direction of each photograph. Include same information as corresponding photographic documentation.
- B. Digital Photographs: Submit images files within five (5) days of taking photographs.
 - 1. Format: Provide images in JPG format, minimum 1600 x 1200 pixels, 400 dpi minimum, in unaltered original files, with same aspect ratio as sensor resolution, un-cropped, in a folder named by date of photograph, accompanied by key plan file.
 - 2. Quantities: Submit an average of twenty (20) photographs per week over the duration of the Project.
 - 3. Identification: Provide the following information with each submission:
 - a. Project name and number.
 - b. Name of Contractor who took the photographs.
 - c. Date and time picture was taken.
 - d. Location of picture relative to a specific location on the site, (for example, "10 ft. southeast of Operations Building").
 - 4. Frequency: Submit photographs weekly under the provisions of Section 013300 Submittal Procedures.

1.03 CLOSEOUT SUBMITTALS

A. Provide two (2) digital DVD discs containing all digital photographs, key plans and identifications for the entire construction duration, organized by folders named by date of photograph, under the provisions of Section 017800 - Closeout Submittals.

PART 2 - PRODUCTS

2.01 PHOTOGRAPHIC MEDIA

A. Digital Camera: Minimum sensor resolution of 5 megapixels.

PART 3 - EXECUTION

3.01 CONSTRUCTION PHOTOGRAPHS

- A. General: Take photographs using the maximum range of depth of field, and that are in focus, to clearly show the Work, Photographs with blurry or out-of-focus areas will not be accepted.
 - 1. Maintain key plan with each set of construction photographs that identifies each photographic location and direction.
 - 2. Use flash in low light levels or backlit conditions.
 - 3. Select vantage points to show status of construction and progress since last photographs were taken.

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 each file name for each image.

1.01 SECTION INCLUDES

A. This Section specifies the requirements for making submissions for the project. Electronic submissions will be required unless expressly noted otherwise.

1.02 IDENTIFICATION OF SUBMITTALS

A. Each and every submission shall be provided by the Contractor and shall be accompanied by a SUBMISSION TRANSMITTAL FORM. Identify each submittal and re-submittal using the form.

1.03 COORDINATION OF SUBMITTALS

- A. Prior to submitting to the Engineer/Architect, fully coordinate all interrelated work. As a minimum, do the following:
 - 1. Determine and verify all field dimensions and conditions by field measuring existing conditions and the installed work of this Contract and work by others.
 - 2. Coordinate with all trades, subcontractors, vendors, system and equipment suppliers and manufacturers, public agencies, and utility companies and secure all necessary approvals, in writing.
- B. Make submittals in groups containing all associated items that in some way depend upon each other.
 - 1. The Engineer/Architect may elect not to review partial or incomplete submissions, whereupon he will notify the Contractor of the additional submissions that are required before a review can be made.

1.04 TIMING OF SUBMITTALS

- A. Make submittals far enough in advance of scheduled dates of installation to provide time for reviews, for securing necessary approvals, for possible revisions and resubmittals, and for placing orders and securing delivery. The Engineer/Architect will review submittals within 15 business days.
- B. Submissions may be returned reviewed, unreviewed, rejected, returned conditioned upon submission of related items, or for other reasons set forth in the Contract Documents.
- C. Make submissions well in advance as the returning, rejecting or disapproval of submissions or other similar circumstances are possible and are deemed "avoidable delays". Costs for these delays or those attributed to Contractor's tardiness in making submittals shall be borne by the Contractor.
- D. Submittals requiring Engineer/Architect's review as required under the technical specifications of these documents shall be submitted prior to installation.
- E. If material or equipment is installed before it has been deemed to be in general compliance with the Contract Documents, as determined by the Engineer/Architect, the Contractor shall be liable for its removal and replacement at no extra charge and without an increase in contract time.

1.05 DESTINATION OF SUBMITTALS

A. Submissions shall be sent to the Engineer/Architect's office to the attention of the Project Manager whom will be named in the Notice to Proceed or at the Construction Kick-Off meeting.

- B. All submittals shall be made via electronic format via e-mail or information exchange server. An information exchange server will be made available to each prime contractor by the Engineer.
- C. When submitting samples, the contractor shall arrange for the delivery of said samples to the office of the Engineer/Architect. Samples shall be clearly marked with name of the project and the Engineer/Architect's project manager.
- D. The Contractor is responsible for the pick-up of the sample from the Engineer/Architect's office following approval. In the event that a sample is not retrieved from the Engineer/Architect's office within thirty days of approval, it will be disposed of.

1.06 CLARITY OF SUBMITTALS

- A. All printed materials shall be neat, clean, professionally drafted by hand or by computer, clear, legible, and of such quality that they can be easily reproduced by normal photocopying or blueprinting machines.
- B. Information shall be separated into groups, subsystems, or similar equipment/function. Copies not conforming to this paragraph will be returned to the Contractor without the Engineer/Architect's review.

1.07 CONTRACTOR'S REPRESENTATION

A. By making a submission, the Contractor represents that he has determined and verified all field measurements and dimensions, field construction criteria, site and building constraints in terms of limitations in moving equipment into an enclosed space, materials, catalog and model numbers and similar data and that he has checked and coordinated each submission with other work at or adjacent to the project site as required.

1.08 ENGINEER/ARCHITECT'S REVIEW

- A. Engineer/Architect will review and comment on each submission conforming to the requirements of this Section.
 - 1. Engineer/Architect's review will be for conformance with the design concept of the project and will be confined to general arrangement and compliance with the Contract Documents only, and will not be for the purpose of checking dimensions, weights, clearances, fittings, laying lengths, tolerances, interference's, for coordinating the work by others or subcontractors.
 - 2. The Engineer/Architect's review of a separate item, or portion of a system, does not represent a review of an assembly or system in which the item functions.
- B. The Engineer/Architect will mark submittals as follows:
 - 1. NO EXCEPTION TAKEN (A) No corrections, no marks. The content of this submittal has been reviewed by the Engineer/Architect and been found to be in general compliance with the Contract Documents. No further submission of this submittal is required and the information contained in the submittal may be built into the work in accordance with the Contract Documents.
 - 2. MAKE CORRECTIONS NOTED (B) Minor amount of corrections. The content of this submittal has been reviewed by the Engineer/Architect and has been found in general to be in compliance with the Contract Documents. The notations made on the submittal by the Engineer/Architect shall be incorporated into the work in accordance with the terms and conditions of the Contract Documents. No further submission of this submittal is required.
 - 3. AMEND AND RESUBMIT (C) The content of this submittal has been reviewed by the Engineer/Architect and this review has determined that additional data and/or modification

to the submitted data or other changes are required to bring the work represented in this submittal into compliance with the Contract Documents. This submittal shall be reviewed and revised in accordance with the Engineer/Architect's comments and resubmitted to the Engineer/Architect for review. The information contained on the resubmittal shall not be incorporated into the work until the submittal is returned to the Contractor marked "NO EXCEPTION TAKEN" or "MAKE CORRECTIONS NOTED".

- 4. REJECTED (D) The content of this submittal has been reviewed by the Engineer/Architect and has been determined not to be in accordance with the requirements contained in the Contract Document and requires too many corrections or other justifiable reason. The submittal shall be corrected and resubmitted or a submittal of an alternate shall be provided. No items are to be fabricated under this mark.
- 5. SUBMIT SPECIFIED ITEM (E)- The content of this submittal has been reviewed by the Engineer/Architect and this review has indicated that the work displayed in the submittal is not in compliance with the Contract Documents. The Contractor shall submit another submittal for this portion of the work, which complies with the Contract Documents.
- 6. RECEIVED (R) This submittal is accepted on the project and filed for record purposes only, in accordance with the terms and conditions of the Contract Documents. Documents marked "RECEIVED" will not be returned.
- C. No payment will be made on any item for which a submission is required if such submission:
 - 1. has not been made,
 - 2. has been made but was not stamped "No Exceptions Taken" by Engineer/Architect,
 - 3. has been made and stamped "Make Corrections Noted", but contractor has not complied with Engineer/Architect's notes marked on the submittal,
 - 4. has been made and stamped "No Exceptions Taken", but item provided does not conform to the shop drawing nor to the Contract Documents.
- D. Submittals not required by these specifications will not be recognized or processed.
- E. Provide space for the Engineer/Architect's review stamp.
- 1.09 RESUBMISSIONS
 - A. Prepare new and additional submissions, make required corrections, and resubmit corrected copies until found in compliance with the Contract Documents.
 - B. On, or with, resubmittals, clearly describe revisions and changes made, other than the corrections requested by Engineer/Architect, which did not appear on the previous submissions.
- 1.10 CONTRACTOR'S RESPONSIBILITIES
 - A. Engineer/Architect's review of submittals shall not relieve the Contractor of his/her responsibility for any deviation from the requirements of the Contract Documents nor relieve the Contractor from responsibility for errors or omissions in the submittals.
 - B. No portion of the work requiring a submission shall be commenced until the Engineer/Architect has found the submission in general compliance with the Contract Documents.
 - C. The Contractor shall provide notification of any specification or drawing deviation.
- 1.11 EXCESS COSTS FOR ENGINEERING/ARCHITECTURAL SERVICES
 - A. The Owner will charge to the Contractor, and will deduct from the partial and final payments due the Contractor, all excess engineering and architectural expenses incurred by the Owner for extra services (work) conducted or undertaken by the Engineer/Architect as stipulated below:

- 1. Services and other similar charges because of the Contractor's errors, omissions, or failures to conform to the requirements of the Contract Documents as related to administrative charges associated with non-compliance with the requirements for making project submissions.
- 2. Services and other similar charges required to examine and evaluate any changes or alternates proposed by the Contractor and which may vary from the Contract Documents.
- 3. Services and other similar charges as a result of the Contractor's proposed substitution of materials, equipment or products which require a redesign of any portion of the project, as contained in the Contract Documents at the time of bid.
- 4. Services and other similar charges as a result of the Contractor's proposed substitution of products which require an engineering and/or architectural evaluation to determine if the substituted product is equal to that specified.
- 5. Services and other similar charges as a result of changes by the Contractor to dimensions, weights, sizes, voltages, phase, horsepower, materials of construction, and similar physical or operating characteristics of the product furnished which require redesign of the project in any way.
- 6. Services and other similar charges for the review of resubmissions of shop drawings that have been marked as "No Exceptions Taken" or "Make Corrections Noted".
- 7. Services and other similar charges for the review of shop drawings submitted more than two (2) times for the same product or portion of the work.

1.12 MISCELLANEOUS SUBMITTALS

A. For products specified only by reference standards, give manufacturer, trade name, model or catalog designation, and reference standards.

1.13 SUBCONTRACTOR LIST

A. The Contractor shall submit within ten (10) calendar days after the date of the Notice to Proceed, a list of all subcontractors, including the names of the major subcontractors that were submitted at the time of the bid.

1.14 MATERIAL SAFETY DATA SHEETS (MSDS)

- A. Comply with "Right to Know" requirements of Chapter 551 of Laws of New York, 1980, concerning notification of the use of toxic substances.
- B. Any product or substance used by the Contractor or its subcontractors which is listed in Subpart Z of OSHA Part 1910 Title 29 of the Code of Federal Regulations entitled "Toxic and Hazardous Substances" shall be identified to the Owner/Engineer/Architect by the Contractor's submission of a standard Material Safety Data Sheet (MSDS) in accordance with "Right To Know" requirements.
- C. Products will not be permitted to be kept on site without a MSDS.

1.15 MANUFACTURER'S INSTRUCTIONS

- A. When specified in individual specification sections, submit printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing, to Engineer/Architect.
- B. Indicate special procedures, perimeter conditions requiring special attention, and special environmental criteria required for application or installation. Provide manufacturer's instructions with shop drawings.

1.16 CERTIFICATIONS

- A. Submit certifications of compliance indicated in the Contract Documents.
- B. Certifications shall be complete and exact, they shall be properly authenticated by the written signature, in ink, of an owner, officer or duly authorized representative of the person, firm or organization issuing such certification and they shall guarantee that the materials or equipment are in complete conformance with the requirements of these specifications.

PART 2 - PRODUCTS

2.01 NOT USED

PART 3 - EXECUTION

3.01 NOT USED

1.01 SECTION INCLUDES

- A. Codes
- B. Governing agencies
- C. Permits

1.02 CODES

- A. Comply with the requirements of the various codes referred to in these Specifications. Such codes shall be the date of the latest revision in effect at the time of receiving bids.
- B. If there is a conflict between local, state, and/or Federal regulatory requirements, seek a consultation with the State Department of Labor. Resolve conflicts to the satisfaction of the State Department of Labor prior to commencing work.

1.03 GOVERNING AGENCIES

- A. All work shall conform to and be performed in strict ac-cordance with all governing agencies such as, but not limited to:
 - 1. Occupational Safety and Health Act OSHA
 - 2. New York City Codes, Rules, Laws, and Ordinances
 - 3. New York State Department of Health
 - 4. Brooklyn Navy Yard Development Corporation Codes, Rules, Laws and Ordinances
 - 5. New York City Department of Buildings Codes and Requirements

1.04 PERMITS AND INSPECTIONS

- A. Representatives of the Owner shall have access to the work for inspection purposes. The Contractor shall provide facilities suitable to the Owner to facilitate inspections of the installed work.
- B. The Contractor shall provide adequate time in the construction schedule for required permit inspections.
- C. A list of special permit inspections required on this project are attached to this project specification as Appendix A.
- D. Obtain and pay for all permits, fees, licenses, certificates, inspections and other use charges required in connection with the work.
- E. All road opening permit fees are the responsibility of the contractor. The contractor shall contact the New York Department of Transportation to assess the total fee charged.
- F. Obtain final approval including letter of completion from New York City Department of Buildings.
- 1.05 COORDINATION WITH GAS/ELECTRIC/TELEPHONE/CABLE UTILITY COMPANY
 - A. Comply with the gas/electric/telephone/cable utility companies regarding excavation around or in the vicinity of existing facilities.

1.06 UTILITY WORK WITHIN RIGHT-OF-WAY

A. Utility Work, either overhead or underground, within the boundaries of the NYC right-of-way, shall conform to procedures set forth by the applicable permits.

PART 2 - PRODUCTS

2.01 NOT USED

PART 3 - EXECUTION

3.01 NOT USED

1.01 SECTION INCLUDES

A. Work of this Section includes the requirements for pre-installation meetings.

1.02 PRE-INSTALLATION MEETINGS

- A. As required in individual specification sections, the Contractor shall convene a pre-installation meeting at the site prior to commencing work of the section.
- B. Pre-installation meetings are to be convened at least one week prior to commencing work on the section. The contractor shall arrange and require attendance of Owner/Architect/Engineer and parties directly affecting, or affected by, work of the specific section.
 - 1. At least seven (7) calendar days advance notice is to be given.
 - 2. The contractor shall prepare agenda and preside at meeting. At a minimum the following items are to be discussed:
 - 3. Review conditions of installation, preparation and installation procedures.
 - 4. Review coordination with related work.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

NOT USED

1.01 SECTION INCLUDES

- A. Requirements for monitoring the quality of the constructed project.
- B. Work of this Section also includes services of an independent testing laboratory for quality assurance testing.

1.02 REFERENCES

- A. ASTM C1077 Practice for Laboratories Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Laboratory Evaluation.
- B. ASTM D3740 Practice for Evaluation of Agencies Engaged in Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction.
- C. ASTM D4561 Practice for Quality Control Systems for an Inspection and Testing Agency for Bituminous Paving Materials.
- D. ASTM E548 Practice for Preparation of Criteria for Use in the Evaluation of Testing Laboratories and Inspection Bodies.
- E. ASTM E699 Practice for Criteria for Evaluation of Agencies Involved in Testing, Quality Assurance, and Evaluating Building Components in Accordance with Test Methods Promulgated by ASTM Committee E6.

1.03 QUALITY ASSURANCE - CONTROL OF INSTALLATION

- A. Monitor quality control over suppliers, manufacturers, prod-ucts, services, site condi-tions, and workmanship, to pro-duce work of specified quality.
- B. Comply with specified standards as a minimum quality for the work except when more stringent tolerances, codes, or speci-fied requirements indicate higher stan-dards or workmanship that is more precise.
- C. Perform work by persons qualified to produce workmanship of specified quality.
- D. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion or disfigurement.
- E. Verify that field measurements are as indicated on shop drawings or as instructed by the manufacturer.

1.04 QUALITY ASSURANCE - TESTING LABORATORY

- A. In order to establish compliance with the Contract Documents, materials shall be tested, examined and evaluated before they are incorporated into the work. During and after installations, additional tests, examinations, and evaluations shall be made to determine continued compliance throughout the course of the work.
- B. Testing laboratory shall be a reputable, experienced firm that is capable of performing all of the required testing and authorized to operate in the state in which the project is located.
- C. Perform all sampling and testing in accordance with specified procedures and use the materials, instruments, apparatus, and equipment required by the codes, regulations and standards. Where specific testing requirements or procedures are not described, perform the

testing in accordance with all pertinent codes and regulations and with recognized standards for testing.

- D. In the event that samples and test specimens are not properly taken, handled, stored or delivered or if other requirements of this Section are not complied with, Engineer/Architect reserves the right to delegate any or all of this work to others, or to take whatever action deemed necessary to ensure that sampling and testing are properly accomplished, for which all costs shall be borne by Contractor.
- E. Engineer/Architect reserves the right to disapprove the use of a specific testing laboratory, even after prior approval, if the laboratory fails to meet or comply with the requirements of this Section. If this should occur, immediately discharge the testing laboratory and retain the services of a different laboratory acceptable to Engineer/Architect.
- F. The testing laboratory shall meet the following criteria:
 - 1. Be capable of performing all of the required tests.
 - 2. Be regularly engaged in performing the types of services required.
 - 3. Have adequate facilities, materials, equipment, and personnel to perform the services.
 - 4. Have an adequately trained, experienced and qualified staff.
 - 5. Have at least one registered professional engineer licensed in the state in which the project is located who shall be capable of performing field tests, supervising laboratory testing and interpreting test results. The professional engineer shall be thoroughly knowledgeable in materials, soils, asphalt paving and concrete.
 - 6. Shall be able to be on the Project site within two hours after being notified.
 - 7. Comply with the requirements of ASTM C1077, ASTM D3740, ASTM D4561, ASTM E548 and ASTM E699.
- G. Testing Equipment: Calibrated at reasonable intervals with devices of accuracy traceable to either National Bureau of Standards or accepted values of natural physical constants.

1.05 REFERENCES

- A. Conform to reference standards by date that the project was last bid.
- B. Obtain copies of standards when required by Contract Docu-ments.
- C. Should specified reference standards conflict with Contract Documents, request clarification from Engineer/Architect before proceeding.
- D. The contractual relationship of the parties to the Contract shall not be altered from the Contract Documents by mention or inference otherwise in any reference document.

1.06 SUBMITTALS

- A. Within seven (7) calendar days from the date of the Notice to Proceed, submit documentation from testing laboratories that clearly indicates experience, location, qualifications of staff, and descriptions of any limitations or restrictions of the firm.
- B. Certified copies of each test report shall be mailed directly to the Engineer/Architect. The Contractor shall arrange with the laboratory to secure copies.
- C. Each report shall be in writing and shall include the testing method used, the test results, the specified results, the exact location of where the test specimens were taken, the date taken, Project identification, Contractor's name and other pertinent information required for a complete and meaningful test report.

- D. Each report shall be signed and certified by a responsible officer of the testing laboratory.
- E. Mail reports directly to Engineer/Architect within 24 hours after the sample is taken, except in those instances when tests cannot be immediately performed because of required curing, incubation periods, or lengthy testing procedures.
- F. The laboratory shall verbally communicate test results when requested by the Engineer/Architect. This does not eliminate nor replace the requirements for a written report.

1.07 SCHEDULING - LABORATORY SERVICES

- A. Except where otherwise specified, the Engineer/Architect will determine the number of samples to be taken, the date and time samples will be taken and tests made, the number and type of tests to be performed, who will collect the samples, how they will be handled and stored and when laboratory personnel are required on site.
- B. Engineer/Architect will notify Contractor of his decision to take samples and/or have tests made and provide him with the pertinent information. Contractor is responsible for notifying the testing laboratory and for having the testing performed, on schedule.
- C. Contractor shall make his own arrangements for the sampling and testing of materials he proposes to incorporate into the work.
- D. Notify Engineer/Architect at least 72 hours in advance of the times at which scheduled samples or tests will be conducted.
- E. If samples and/or tests cannot be taken or performed when required, delay the work until such time that they can be accomplished. Where possible, any work that has been installed but has not been sampled or tested as required shall be tested by other means. Upon Engineer/Architect's request, uncover any work, which has been buried or covered, and perform special tests designated by Engineer/Architect. If the work cannot be tested by other means, Engineer/Architect may declare the work unacceptable. All costs associated with noncompliance and for special testing shall be borne by the Contractor.
- F. Should the testing laboratory be scheduled to take or collect samples or to perform tests, and finds that it is unable to do so as a result of delays in construction, inclement weather, or any other reason, reschedule the tasks for a date acceptable to Engineer/Architect. Costs associated with times testing laboratory is unable to perform scheduled services shall be borne by the Contractor and will not be paid for under the allowance.
- G. Plan all work and operations to allow for the taking and collection of samples and allow adequate time for the performance of tests. Delay the progress of questionable work until the receipt of the certified test reports.

1.08 TESTING REQUIREMENTS

- A. Compaction Testing Soil:
 - 1. Perform compaction testing in accordance with ASTM D2922, Standard Test Methods for Density of Soil and Soil-Aggre-gate in Place by Nuclear Methods (Shallow Depth) or ASTM D1556 Density and Unit Weight of Soil In Place by the Sand Cone Method.
 - 2. Perform tests and analysis of fill material in accordance with ANSI/ASTM D698 Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures, Using 55-lb. Rammer and 12-inch Drop.
- B. Compaction Testing Asphaltic Concrete Pavement:

- 1. Perform asphaltic concrete compaction testing in accor-dance with ASTM D2950 -Standard Test Method of Density of Bituminous Concrete in Place by Nuclear Methods.
- 2. Calibrate nuclear density measurement equipment based on theoretical maximum specific gravity of asphaltic con-crete pavement material.
- Perform test to determine theoretical maximum specific gravity in accordance with ASTM D2041 Theoretical Maxi-mum Specific Gravity of Bituminous Pavement Mixtures. Perform test on mix at plant prior to delivery. Collect sample at plant in accordance with ASTM D979 - Sampling Bituminous Paving Mixtures and perform test in approved laboratory if plant does not have necessary equipment.
- C. Asphalt Testing:
 - 1. Collect samples at point of delivery in accordance with ASTM D979, Standard Practice for Sampling Bituminous Paving Mixtures.
 - 2. Perform extraction test in accordance with ASTM D2172, Standard Test Meth-ods for Quantitative Extraction of Bitumen from Bituminous Paving Mix-tures.
 - 3. Perform gradation test in accordance with ASTM C136, Method for Sieve Analysis of Fine and Coarse Aggregates.

1.09 TESTING SCHEDULE

- A. Compaction Testing of Soil:
 - 1. Pipe Installation: 1 test per 100 linear feet per foot of backfill.
 - 2. Pavement Subgrade: 1 test per 50 square feet per lift.
- B. Asphalt Testing: 1 test per 50 square feet per course.
- C. Compaction Testing of Pavement: 1 test per 50 square feet per course.
- D. Concrete Cast in place
- E. Structural steel high strength bolting
- F. Mechanical systems
- 1.10 FIELD OBSERVATION OF CONTRACTOR'S WORK
 - A. The Engineer/Architect will provide periodic observation of the Contractor's work.

1.11 SPECIAL INSPECTION OF CONTRACTOR'S WORK

- A. The Special Inspector will conduct the required permit inspections of the Contractor's work.
- B. Refer to contractor drawings for a list of all special inspections required on this project.

PART 2 - PRODUCTS

- 2.01 NOT USED
- PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that existing site conditions and substrate surfaces are acceptable for subsequent Work. Beginning new Work means acceptance of existing conditions. Verify that the existing substrate is capable of structural support or attachment of new Work being applied or attached.

3.02 PREPARATION

- A. Clean substrate surfaces prior to applying next material or substance. Seal cracks or openings of substrate prior to applying next material or substance.
- B. Apply manufacturer required or recommended substrate primer, sealer, or conditioner prior to applying any new material or substance in contact or bond.

3.03 FIELD QUALITY CONTROL

- A. Allow representatives of the testing laboratory access to the work at all time. Provide all equipment, labor, materials, and facilities required by the laboratory to properly perform its functions. Cooperate with and assist laboratory personnel during the performance of their work.
- B. Test specimens and samples shall be taken by the person(s) designated in other Sections, or as directed by Engineer/Architect. Conduct field sampling and testing in the presence of Engineer/Architect. Provide all materials, equipment, facilities and labor for securing samples and test specimens and for performing all field-testing.

H2M

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Control of environmental pollution and damage that the Contractor must consider for air, water, and land resources in preparing a bid and while constructing the project. This Section includes management of site aesthetics, noise, solid and liquid waste and wastewater, and other pollutants that may be generated by the Contractor.
- B. Include all costs associated with environmental protection as specified herein and as specified in other Sections of these specifications in the total price bid.

1.02 DEFINITIONS

- A. Environmental pollution and damage is defined as the presence of chemical, physical, or biological elements or agents which:
 - 1. Adversely effect human health or welfare,
 - 2. Unfavorably alter ecological balances of importance to human life,
 - 3. Impact wetlands,
 - 4. Effect other species of importance to man, or;
 - 5. Degrade the utility of the environment for aesthetic, cultural, and historical purposes.
- B. Definitions of Pollutants:
 - 1. Sediment: Soil and other debris that has been eroded and transported by runoff water.
 - 2. Solid Waste: Rubbish, debris, garbage, and other discarded solid materials resulting from industrial, commercial, and agricultural operations and from community activities.
 - 3. Rubbish: Combustible and noncombustible wastes such as paper, boxes, glass and crockery, metal and lumber scrap, tin cans, and bones.
 - 4. Debris: Combustible and noncombustible wastes, such as leaves, tree trimmings, ashes, and waste materials resulting from construction or maintenance and repair work.
 - 5. Chemical Waste: Petroleum products, bituminous materials, salts, acids, alkalies, herbicides, pesticides, organic chemicals, and inorganic wastes.
- C. Sanitary Wastes:
 - 1. Sewage: Domestic sanitary sewage and human and animal waste.
 - 2. Garbage: Refuse and scraps resulting from preparation, cooking, dispensing, and consumption of food.

PART 2 - PRODUCTS

2.01 NOT USED

PART 3 - EXECUTION

3.01 PROTECTION OF ENVIRONMENTAL RESOURCES

- A. Protect environmental resources within the project boundaries and those affected outside the limits of permanent work during the entire period of this Contract. Confine activities to areas defined by the Contract Documents.
- B. Protection of Land Resources: Prior to construction, identify all land resources to be preserved within the work area. Do not remove, cut, deface, injure, or destroy land resources including trees, shrubs, vines, grasses, top soil, and land forms without permission from the Engineer/Architect. Do not fasten or attach ropes, cables, or guys to trees for anchorage unless specifically authorized, or where special emergency use is permitted.

- C. Work Area Limits: Prior to any construction, mark the areas that require work to be performed under this Contract. Mark or fence isolated areas within the general work area that are to be saved and protected. Protect monuments, works of art, and markers before construction operations begin. Convey to all personnel the purpose of marking and protecting all necessary objects.
- D. Protection of Landscape: Protect trees, shrubs, vines, grasses, land forms, and other landscape features shown on the drawings to be preserved by marking, fencing, or using any other approved techniques.
 - 1. Immediately repair all damage to existing trees and shrubs by trimming, cleaning, and painting with antiseptic tree paint.
 - 2. Do not store building materials or perform construction activities closer to existing trees or shrubs than the farthest extension of their limbs.
- E. Contractor to submit an Excavation Work Plan in accordance with BNYDC standards.
- F. Reduction of Exposure of Unprotected Erodible Soils: Plan and conduct work to minimize the duration of exposure of unprotected soils. Excavate areas in reasonably sized increments only as needed to use.
 - 1. Manage and control excess material to limit spoil to areas immediately adjacent to excavation and prevent erosion of soil or sediment from entering nearby property, watercourses, drainage facilities or streets.
- G. Protection of Water Resources: Keep construction activities under surveillance, management, and control to avoid pollution of surface and ground waters and sewer systems. Implement management techniques to control water pollution by the listed construction activities that are included in this Contract.
- H. Control movement of materials and equipment during construction to prevent violation of water pollution control standards of the Federal, State, or local government.
- I. Monitor water areas affected by construction.
- J. Protection of Fish and Wildlife Resources:
 - 1. Keep construction activities under surveillance, management, and control to minimize interference with, disturbance of, or damage to fish and wildlife.
- K. Protection of Air Resources: Keep construction activities under surveillance, management, and control to minimize pollution of air resources.
 - 1. Burning is not permitted on the job site. Keep activities, equipment, processes, and work operated or performed, in strict accordance with the State and Federal emission and performance laws and standards.
 - 2. Maintain ambient air quality standards set by the Environmental Protection Agency and State, for those construction operations and activities specified.
- L. Particulates: Control dust particles, aerosols, and gaseous by-products from all construction activities, processing, and preparation of materials (such as from asphaltic batch plants) at all times, including weekends, holidays, and hours when work is not in progress.
- M. Particulates Control: Maintain all excavations, stockpiles, haul roads, permanent and temporary access roads, plant sites, spoil areas, borrow areas, and all other work areas within or outside the project boundaries free from particulates which would cause a hazard or a nuisance. Sprinkle, chemical treatment of an approved type, light bituminous treatment, baghouse, scrubbers, electrostatic precipitators, or other methods are permitted to control particulates in the work area.

- N. Hydrocarbons and Carbon Monoxide: Control monoxide emissions from equipment to Federal and State allowable limits.
- O. Odors: Control odors of construction activities and prevent obnoxious odors from occurring.
- P. Reduction of Noise: Minimize noise using every action possible. Perform noise-producing work in less sensitive hours of the day or week as directed by the Engineer/Architect. Maintain noise-produced work at or below the decibel levels and within the time periods specified in accordance with OSHA and local ordinances, whichever is more restrictive.
 - 1. Perform construction activities involving repetitive, high-level impact noise only between 8:00 a.m. and 4:30 p.m. unless otherwise permitted by local ordinance or by the Engineer/Architect.
 - 2. Reduce repetitive impact noise on the property.
 - 3. Provide sound-deadening devices on equipment and take noise abatement measures that are necessary to comply with the requirements of this Contract, consisting of, but not limited to, the following:
 - 4. Use shields or other physical barriers to restrict noise transmission.

1.01 SECTION INCLUDES

- A. This Section supplements the General Conditions.
- B. The Work of this Section includes temporary facilities, utilities, and controls to be furnished by the Contractors for this project as it is specified herein.
- C. This Section is made a part of all Construction Contracts associated with the project. It contains specific references to the particular Contractor supplying said product or service. If no reference is provided then the requirement applies to all Prime Construction Contractors.

1.02 CARE AND PLACEMENT

- A. All temporary and permanent facilities and controls and all other elements on the project site shall meet all standards of the Occupational Safety and Health Act of 1970 and subsequent revisions. Each Contractor shall comply with all requirements of the Act.
- B. Contractor shall take every precaution and shall provide such equipment and facilities as are necessary or required for the safety of its employees and persons at the site.
- C. In the event of damage to existing and/or temporary facilities then immediately make all repairs and replacements to an equal condition prior to the event.

1.03 QUALITY PERFORMANCE

- A. Comply with and perform all work in accordance with the requirements of local authorities and utility companies having jurisdiction, and all applicable codes, regulations and ordinances.
- B. Secure approvals from the appropriate jurisdictions and utility companies on all repairs, relocations, connections, disconnections and the Work.
- C. All barricades, warning signs, lights, temporary signals and other protective devices shall conform with "Manual on Uniform Traffic Control Devices for Streets and Highways", US Government Printing Office.

1.04 SUBMITTALS

- A. Contractor shall provide a list of contact numbers as follows:
 - 1. Contractor's superintendent and office project manager (home, cellular, office, fax, trailer, and email address).
 - 2. All subcontractors.
 - 3. All utility companies.
 - 4. Emergency services such as fire department, police, and ambulance.
 - 5. Each Contractor shall also submit the following:
 - 6. Name and qualifications of person or persons who shall be available to render first aid.
 - 7. Names, addresses and telephone numbers of personnel who can be telephoned and act on behalf of Contractor in the event of emergencies or other problems requiring prompt attention during winter shutdown, holidays, nights and other periods when the Contractor's superintendent may be absent from the project site.
- B. The Contractor shall provide a sketch showing routing of temporary water service for construction purposes and for exfiltration tank testing. Provide cuts and plumber's certification for backflow device(s).

1.05 CONTRACTOR'S RESPONSIBILITY

- A. Each Contractor shall be responsible for the installation, performance, maintenance, and repair of all temporary facilities and controls specified herein this Section as originally provided.
- B. The Owner reserves the right to immediately correct a Contractor caused action, if in the opinion of the Owner, the situation may result in the immediate loss of life, property, and degradation of the environment. The costs for actions taken by the Owner shall be deducted from money due or to become due the Contractor. Amounts in excess shall be paid by the Contractor.
- C. If the Contractor caused situation is not deemed immediate, then the Contractor shall, within 24 hours of receipt of written and/or verbal notice, correct the defect or unsatisfactory condition.
- D. The Owner may repair, correct, replace, or install temporary facilities to correct the situation if the Contractor fails to perform within the allowed time. The costs to make the corrections shall be deducted from money due or to become due the Contractor. Amounts in excess shall be paid by the Contractor.

PART 2 - PRODUCTS

2.01 GENERAL

- A. The Owner may use temporary power lines, pipes, roadways or other facilities that each Contractor furnishes, installs, and maintains (then removes at the completion of the work), during the period of construction.
- B. The location of all temporary power lines, roadways, and other necessary temporary facilities shall be subject to the approval of the Engineer, and these shall be located and operated so as not to interfere with the operation of the facilities.

2.02 WATER FOR CONSTRUCTION PURPOSES

- A. Contractor shall obtain water from the nearest potable water source as designated by the Owner.
- B. The Owner will pay for water usage for general construction activities such as dust control and for sanitary purposes, like hand washing.
- C. Potable water, used for pipe exfiltration testing, process tank testing, storage tank testing, or elevated water storage tank testing, will not be paid for by the Owner. The Contractor shall include the costs for water for this purpose in the price as-bid.
- D. Contractor shall install his or her own backflow prevention device at the supply point where it is connected to the Owner's system.
 - 1. The water purveyor shall approve the device.
 - 2. The device shall be tested and certified as functioning properly.
 - 3. Post the certification in a location acceptable to the water purveyor.
- E. A water meter shall also be installed on any water service lines used to supply water for exfiltration testing.
- F. Contractor shall exercise measures to conserve water.

- G. Provide insulation and heat tracing to prevent freezing of temporary piping. Drain hoses at the end of each use.
- H. All Contractors, subcontractors, and personnel involved in the project shall be permitted to use water for construction purposes as provided under this paragraph.

2.03 SANITARY FACILITIES

- A. Contractor shall provide and maintain temporary toilet facilities for use by all contractors.
- B. These facilities shall be maintained in a strictly sanitary manner and be screened from the general public.
- C. All facilities shall be in accordance with the Occupational Safety and Health Act (OSHA) standards and all other applicable local codes.
- D. All applicable codes and regulations regarding the maintenance and method of waste disposal for these facilities will be strictly enforced. These facilities shall be of the portable type.
- E. The Owners sanitary facility will not be available for use by any contractor.
- F. Comply with the requirements also contained in Section 015719 Environmental Protection.
- G. Contractor shall provide and pay for heating devices and fuel as required to maintain adequate heat for specific construction operations; i.e. painting, application of coatings, etc., where so specified elsewhere in these specifications.

2.04 VENTILATION

- A. Contractor shall ventilate enclosed areas to assist in the curing of materials, to dissipate humidity, and to prevent accumulation of dust, fumes, vapors or gases.
- B. The Contractor shall ventilate buildings to safely apply paint in accordance with Section 099100 requirements.

2.05 BARRIERS AND PROTECTION

- A. Contractor shall provide railings, barricades, signs, fences, posting of acquired permites, HASP (Health and safety plan), and other protective devices to prevent unauthorized entry to construction areas, to allow for the Owner's safe use of the site and to protect existing facilities and adjacent structures from damage from the work.
- B. Provide barricades and covered walkways required by governing authorities for public rights-of-way and for public access to existing buildings.
- C. Provide protection for plant life designated to remain.
- D. Protect vehicular traffic, stored materials, public utilities, site and structures from damage.
- E. Provide warning signs, detour signs and other traffic control devices to insure the safety of plant operators and to adequately direct traffic around the work. Illuminate barricades, obstructions, and warning signs from sunset to sunrise.

2.06 TEMPORARY FENCING

A. The Contractor is responsible for performance compliance with OSHA standards.

- B. Contractor shall provide temporary safety fence around all open excavations or other dangerous conditions on the construction site.
 - 1. All temporary safety fencing shall be designed and erected in compliance with OSHA standards, but in no case less stringent than these specifications for fencing.
 - 2. Fence is to be bright orange in color, a minimum of 4 feet high, and properly secured using 1" diameter steel pipe at 4'-0" on-center as support posts.
 - 3. Stake each support post to a depth of 18" and tamp securely into place.
 - 4. Each post shall be plumb.
 - 5. Secure fencing to posts using heavy-duty 12" long cable ties or tie wire.
 - 6. The fence and supports shall remain the property of the Contractor and be promptly removed at the appropriate time.
 - 7. Post the following sign every 100-ft. along the perimeter of the fence: "RESTRICTED AREA KEEP OUT".
 - a. Each sign shall be commercially printed and be 18" x 36".
 - b. It shall be secured to the fence with heavy-duty tie wraps.

2.07 TEMPORARY HANDRAILS AND SCAFFOLDS

- A. All temporary handrailing and scaffolds shall be designed and erected in compliance with OSHA standards. Contractor is responsible for performance compliance with OSHA standards.
- B. Handrails shall be securely installed and maintained in accordance with OSHA regulations until the permanent railing or grating has been permanently installed and approved by the Engineer.
- C. All scaffolding and platforms shall be erected in a safe and substantial manner complying with OSHA requirements.
- D. All temporary handrails and scaffolds shall be designed by a professional engineer licensed in the state where the project is being constructed.
 - 1. The design drawings and details shall be stamped by the licensed engineer and submitted for record purposes.
 - 2. The Contractor's design engineer shall visit the site to certify that the handrailing and/or scaffolds have been erected pursuant to the stamped design.
- E. The Contractor shall protect all openings in building/structures of any type such as shafts, deck openings, and other building related chases.
- F. The Contractor shall also install two (2) separate temporary handrailing installations at two (2) separate stages of the construction for all structures where OSHA requires handrailing is to be provided.
 - 1. OSHA approved wooden railing shall be installed at the point where the deck platform formwork is proceeding and before reinforcement steel is placed.
 - a. Railing shall be installed using the bridge brackets used to construct the cantilevered platforms or other method as selected by the Contractor in compliance with OSHA.
 - b. Coordinate and advise the Prime Electrical Contractor of the date when the handrailing will be in place so that embedded conduit can be installed.
 - 2. The second installation of railing shall be fabricated of steel structural members with aircraft cable and turnbuckles installed immediately after the deck platform is constructed and the formwork is removed.

2.08 EROSION CONTROL

A. Contractor shall provide measures to keep the ground surface well drained, but avoid erosion of embankments, excavations, the project site, and adjacent areas.

- B. Contractor shall comply with all local codes, rules, and regulations concerning soil erosion.
 - 1. Use hay bales or silt fences to control erosion to the satisfaction of the Engineer and regulatory agencies. Use hay bales or silt fences to stop silt and sediment from reaching surface waters, parking lots and roads.
 - 2. Leave erosion control methods in place until ground cover is established or until date of substantial completion.
- C. The Contractor shall install erosion control measures as shown on the Drawings.

2.09 DUST CONTROL

- A. Contractor shall provide measures to control dust resulting from the work.
- B. Control dust at locations and in such quantities and frequencies as required to prevent dust from becoming a nuisance to the surrounding area.
- C. In the event the Contractor does not adequately provide for dust control, or should insufficient quantities of dust control agents be placed and Contractor fails to place additional quantities within 4 hours after Engineer's direction, Owner will perform the required work by whatever means deemed expedient and all expenses incurred by Owner will be charged to and paid by Contractor.
- D. Take care in selecting and applying dust control agents so as not to make roadways or walkways slippery, muddy or hazardous. Dust control agents shall be acceptable to the Engineer.
- E. The Contractor shall provide all roadways with dust control.

2.10 RUBBISH REMOVAL

- A. The Contractor shall be responsible for overall rubbish removal.
- B. Burning of rubbish and trash will not be permitted.
- C. The Contractor shall clean up trash as specified in Section 011400 Work Restrictions or more often if the trash interferes with the work of others, presents a hazard or if directed by the Engineer.
- D. Dispose of rubbish and waste materials in accordance with state regulations and local ordinances.
- E. The Contractor shall also place rubbish containers at locations selected by the Engineer.
 - 1. Furnish adequately sized rubbish containers from the date of initial mobilization to the date of final payment.
 - 2. As a minimum, the Contractor shall furnish ten (10) 55-gallon general trash containers. Secure the top of each container to the container.
 - 3. Secure the container itself so that it does not get blown about the site.
- F. The Contractor shall be responsible for maintaining the site free of trash.
- G. Contractor is responsible in maintaining the site free of trash and debris.
 - 1. It shall be the sole responsibility of the Contractor to prevent trash from being blown about the site.
 - 2. Provide a worker to police the site at least for 1 hour at the end of each day that work is being undertaken by the Contractor.

2.11 SNOW REMOVAL

- A. The Contractor shall be responsible for maintaining roads, walkways, sidewalks, and parking areas/lots free of snow. Provide snow plowing during and after each snow fall equal to or greater than 1.0 inch as reported by the local weather service.
- B. Any damage resulting from the Contractor's snow clearing operations shall be immediately repaired at no additional cost to the Owner.

2.12 ENCLOSURES

- A. Contractor shall provide and maintain temporary enclosures, sheds, or fenced-in areas to accommodate protection for products, material and equipment.
- B. Store equipment that cannot be exposed to outdoors in accordance with Section 016500 Product Delivery, Storage and Handling.

2.13 SECURITY

- A. Contractor shall provide security and facilities to protect work from unauthorized entry, vandalism and theft.
- B. Coordinate with Owner's security program, if applicable.
- C. Contractor has full responsibility for the working area until final acceptance and payment.
- D. The Contractor shall maintain the perimeter fence that pre-existed prior to the start of construction. A temporary perimeter fence shall be required at all times during the construction and until the new perimeter fence is installed, or until the project is accepted by the Owner.
- E. It shall be the Contractor's responsibility to lock all gates to the site, and on the access road, at the end of each work day.
- F. All on-site employees shall bear, at all times, an identification badge, conspicuously worn, which shall include, at a minimum, a passport or similar size photograph, the name of the employee and the name of the company.
- G. Any employee working on site without a photo identification badge will be instructed to leave the site.
- H. All company vehicles shall be conspicuously identified, through sufficiently sized lettering on both the passenger and driver sides, with the company name, address and telephone number.
 - 1. All employee owned vehicles shall have an 8-1/2 inch by 11 inch sign with the company name, address and telephone number placed on the dashboard on the driver side.
 - 2. Vehicles may be subject to search by the Owner or owner's representatives.
 - 3. Any vehicle that does not have the company name, address and telephone number will not be permitted on the Owners' property.
- I. Submit to the Owner a complete listing of all employees that will or might be performing work at the project site.
 - 1. Furthermore, provide sufficient information as may be required for the Owner to conduct background checks, in accordance with the Fair Credit Reporting Act.
 - 2. Background checks may be performed at the discretion of the Owner due to the sensitive nature of the work and the extensive, and sometimes unsupervised, access to Owner property and buildings.

3. The Contractor shall be required, on request from the Owner, at any time prior to or during the work, to provide releases from its employees and officers to the Owner, H2M, and a background search firm, hired by either the Owner or H2M, to conduct background checks in accordance with the Fair Credit Reporting Act and applicable state law.

2.14 PARKING

- A. Do not allow heavy construction vehicle parking on existing pavement, if existing pavement is not scheduled for replacement or restoration.
- B. Provide and maintain access to fire hydrants, building entrances, process tanks, doors and the work in general.
- C. Contractor shall have his or her employees and subcontractors park in areas designated by the Owner/Engineer/Architect.
- D. If designated on the Contract Drawings, then only use those areas for parking.
- E. Where trades work from their trucks, then coordinate the parking of trucks with other prime contractors.
- F. If a Site Utilization Plan has been specified, then parking shall be as sited in the plan.
- G. Since the site is limited in space, special transportation may have to be furnished by the respective Contractor to have their employees bused to the site from off-site parking.

2.15 DAMAGES

- A. Contractor, with the prior approval of the Owner/Engineer/Architect, shall promptly repair any damage, directly or indirectly caused by the Contractor's operations.
- B. All repairs shall be to the complete satisfaction of the Owner and equal in quality to that which pre-existed.

2.16 FIRST AID FACILITIES & EMERGENCY TELEPHONE NUMBERS

- A. Each Contractor shall provide and maintain adequately equipped first aid facilities in a location or at locations that are readily accessible to workmen, Engineer and visitors to the site.
- B. Provide at least one on-site employee who is properly trained in first aid and who shall be available to render first aid whenever construction is in progress.
- C. Provide a list of emergency telephone numbers as specified above.
- D. Post the list of emergency telephone numbers as directed by the Engineer.

2.17 POLLUTION CONTROL

- A. Do not permit pollutants, such as chemicals, fuels, lubricants, calcium chloride, sewage, water containing sediments and other deleterious, poisonous, toxic or oxygen demanding substances to enter or leach into streams, lakes, wetlands, other surface waters, into groundwater, or into the air.
- B. In waters used for public water supply or used for trout, salmon or other game or forage fish spawning or nursery, control measures must be adequate to assure that turbidity in the receiving water will be increased not more than 10 standard turbidity units (s.t.u.) in the absence of other more restrictive locally established limitations, unless otherwise permitted by the State.

- C. In no case shall the classification for the surface water be violated, unless otherwise permitted by the State.
- D. In water used for other purposes, the turbidity shall not exceed State limits.

PART 3 - EXECUTION

3.01 PROTECTION OF EXISTING UTILITIES AND PUBLIC WORKS

- A. Maintain and protect existing utilities and public works including, but not limited to, conduits, sewers, water mains, electric and telephone conductors or conduits, and gas mains encountered during the construction.
- B. In the event that it is not possible to cross over, under, around or otherwise avoid the existing utility, the owner of the utility shall be notified that the utility must be altered or moved.
- C. In the event that damage shall result to any service pipe for water or gas, or any private or public sewer or conduit, the Contractor shall immediately, and at its own expense, repair same to the satisfaction of the Engineer/Architect.
- D. Any contents from the pipes, sewers or conduits shall be immediately removed and disposed in accordance with applicable laws.

3.02 REMOVAL OF UTILITIES, FACILITIES AND CONTROLS

- A. Remove temporary above grade or buried utilities, equipment, facilities and materials, immediately following substantial completion and prior to release of retainage.
- B. Remove underground installations to a minimum depth of 2 feet.
- C. Regrade site to restore to existing slope and elevation, and restore the surface.
- D. Clean and repair damage caused by installation or use of temporary work.
- E. Restore existing facilities used during construction to original condition. Restore permanent facilities used during construction to specified condition.
- F. Remove temporary parking and access roads.
- G. Regrade area to existing slope and elevation and restore the surface to its existing condition.
- H. Final payment will not be processed until all removals have been completed to the satisfaction of the Owner/Engineer/Architect.

3.03 PROTECTION OF EXISTING PROPERTY

- A. Protect existing structures and finishes during performance of the work.
- B. Protect existing trees and plants during performance of the work.
- C. Do not deposit excavated materials or store materials around trees or plants or attach guy wires to trees.

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PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Control of environmental pollution and damage that the Contractor must consider for air, water, and land resources in preparing a bid and while constructing the project. This Section includes management of site aesthetics, noise, solid and liquid waste and wastewater, and other pollutants that may be generated by the Contractor.
- B. Include all costs associated with environmental protection as specified herein and as specified in other Sections of these specifications in the total price bid.

1.02 DEFINITIONS

- A. Environmental pollution and damage is defined as the presence of chemical, physical, or biological elements or agents which:
 - 1. Adversely effect human health or welfare,
 - 2. Unfavorably alter ecological balances of importance to human life,
 - 3. Impact wetlands,
 - 4. Effect other species of importance to man, or;
 - 5. Degrade the utility of the environment for aesthetic, cultural, and historical purposes.
- B. Definitions of Pollutants:
 - 1. Sediment: Soil and other debris that has been eroded and transported by runoff water.
 - 2. Solid Waste: Rubbish, debris, garbage, and other discarded solid materials resulting from industrial, commercial, and agricultural operations and from community activities.
 - 3. Rubbish: Combustible and noncombustible wastes such as paper, boxes, glass and crockery, metal and lumber scrap, tin cans, and bones.
 - 4. Debris: Combustible and noncombustible wastes, such as leaves, tree trimmings, ashes, and waste materials resulting from construction or maintenance and repair work.
 - 5. Chemical Waste: Petroleum products, bituminous materials, salts, acids, alkalies, herbicides, pesticides, organic chemicals, and inorganic wastes.
- C. Sanitary Wastes:
 - 1. Sewage: Domestic sanitary sewage and human and animal waste.
 - 2. Garbage: Refuse and scraps resulting from preparation, cooking, dispensing, and consumption of food.

1.03 SUBMITTALS

- A. Submit the following under provisions of Section 013300:
 - 1. Environmental Protection Plan / Erosion Control Plan: After the Contract is awarded and prior to the commencement of the work, meet with the Engineer to discuss the proposed Environmental Protection Plan and to develop mutual understanding relative to details of environmental protection. Not more than twenty (20) days after the meeting, prepare and submit to the Engineer for approval, a written and/or graphic Environmental Protection Plan including, but not limited to, the following:
 - a. Methods for protection of features to be preserved within authorized work areas including trees, shrubs, vines, grasses, ground cover, landscape features, air and water quality, fish and wildlife, soil, historical, and archeological and cultural resources.
 - b. Permits, licenses, and the location of the solid waste disposal area(s).
 - c. Drawings showing locations of any proposed temporary excavations or embankments for haul roads, material storage areas, structures, sanitary facilities, and stockpiles of excess or spoil materials.

- 2. Prepare an Erosion Control Plan describing and showing methods for erosion control that shall be employed by the Contractor to protect adjoining wetlands.
- 3. Prepare a Work Area Plan showing the proposed activity in each portion of the area and identifying the areas of limited use or nonuse. Plan shall include measures for marking the limits of use areas. This plan may be incorporated within the Erosion Control Plan.
- 4. Approval of the Contractor's Environmental Protection Plan / Erosion Control Plan will not relieve the Contractor of responsibility for adequate and continued control of pollutants and other environmental protection measures.
- 5. Prepare Health and Safety Plan, which once approved shall be displayed on site.

PART 2 - PRODUCTS

2.01 NOT USED

PART 3 - EXECUTION

- 3.01 PROTECTION OF ENVIRONMENTAL RESOURCES
 - A. Protect environmental resources within the project boundaries and those affected outside the limits of permanent work during the entire period of this Contract. Confine activities to areas defined by the Contract Documents.
 - B. Protection of Land Resources: Prior to construction, identify all land resources to be preserved within the work area. Do not remove, cut, deface, injure, or destroy land resources including trees, shrubs, vines, grasses, top soil, and land forms without permission from the Engineer. Do not fasten or attach ropes, cables, or guys to trees for anchorage unless specifically authorized, or where special emergency use is permitted.
 - C. Work Area Limits: Prior to any construction, mark the areas that require work to be performed under this Contract. Mark or fence isolated areas within the general work area that are to be saved and protected. Protect monuments, works of art, and markers before construction operations begin. Convey to all personnel the purpose of marking and protecting all necessary objects.
 - D. Protection of Landscape: Protect trees, shrubs, vines, grasses, land forms, and other landscape features shown on the drawings to be preserved by marking, fencing, or using any other approved techniques.
 - 1. Box and protect from damage existing trees and shrubs to remain on the construction site.
 - 2. Immediately repair all damage to existing trees and shrubs by trimming, cleaning, and painting with antiseptic tree paint.
 - 3. Do not store building materials or perform construction activities closer to existing trees or shrubs than the farthest extension of their limbs.
 - E. Reduction of Exposure of Unprotected Erodible Soils: Plan and conduct earthwork to minimize the duration of exposure of unprotected soils. Clear areas in reasonably sized increments only as needed to use. Form earthwork to final grade as shown. Immediately protect side slopes and back slopes upon completion of rough grading.
 - 1. Temporary Protection of Disturbed Areas: Construct diversion ditches and berms to retard and divert runoff from the construction site to protected wetlands areas as defined in the Clean Water Act and federal, state and local regulations.
 - 2. Erosion and Sedimentation Control Devices:
 - a. Construct or install all temporary and permanent erosion and sedimentation control features as shown or specified in the Contract Documents and as required by the Owner pursuant to direction of the regulatory authority.
 - b. Maintain temporary erosion and sediment control measures such as berms, dikes, drains, hay bales, erosion control fencing, sedimentation basins, grassing, and

- 3. Manage borrow areas on and off Owner property to minimize erosion and to prevent sediment from entering nearby property, watercourses and local streets.
- 4. Manage and control spoil areas on and off Owner property to limit spoil to areas shown on the Environmental Protection Plan and prevent erosion of soil or sediment from entering nearby property, watercourses or streets.
- 5. Protect adjacent areas from degradation by temporary excavations and embankments.
- F. Handle and dispose of solid wastes in such a manner that will prevent contamination of the environment.
 - 1. Place solid wastes (excluding clearing debris) in containers that are emptied on a regular schedule.
 - 2. Transport all solid waste off Owners' property and dispose of waste in compliance with Federal, State, and local requirements.
 - 3. Store chemical waste away from the work areas in corrosion resistant containers and dispose of waste in accordance with Federal, State, and local regulations.
 - 4. Handle discarded materials other than those included in the solid waste category as directed by the Engineer.
- G. Protection of Water Resources: Keep construction activities under surveillance, management, and control to avoid pollution of surface and ground waters and sewer systems. Implement management techniques to control water pollution by the listed construction activities that are included in this Contract.
- H. Washing and Curing Water: Do not allow wastewater directly derived from construction activities to enter water areas. Collect and place wastewater in retention ponds allowing the suspended material to settle, the pollutants to separate, or the water to evaporate.
- I. Control movement of materials and equipment during construction to prevent violation of water pollution control standards of the Federal, State, or local government.
- J. Monitor water areas affected by construction.
- K. Protection of Fish and Wildlife Resources:
 - 1. Keep construction activities under surveillance, management, and control to minimize interference with, disturbance of, or damage to fish and wildlife.
 - 2. Prior to beginning construction operations, list species that require specific attention along with measures for their protection.
- L. Protection of Air Resources: Keep construction activities under surveillance, management, and control to minimize pollution of air resources.
 - 1. Burning is not permitted on the job site. Keep activities, equipment, processes, and work operated or performed, in strict accordance with the State and Federal emission and performance laws and standards.
 - 2. Maintain ambient air quality standards set by the Environmental Protection Agency and State, for those construction operations and activities specified.
- M. Particulates: Control dust particles, aerosols, and gaseous by-products from all construction activities, processing, and preparation of materials (such as from asphaltic batch plants) at all times, including weekends, holidays, and hours when work is not in progress.
- N. Particulates Control: Maintain all excavations, stockpiles, haul roads, permanent and temporary access roads, plant sites, spoil areas, borrow areas, and all other work areas within or outside the project boundaries free from particulates which would cause a hazard or a nuisance. Sprinkle, chemical treatment of an approved type, light bituminous treatment, baghouse,

scrubbers, electrostatic precipitators, or other methods are permitted to control particulates in the work area.

- O. Hydrocarbons and Carbon Monoxide: Control monoxide emissions from equipment to Federal and State allowable limits.
- P. Odors: Control odors of construction activities and prevent obnoxious odors from occurring.
- Q. Reduction of Noise: Minimize noise using every action possible. Perform noise-producing work in less sensitive hours of the day or week as directed by the Engineer. Maintain noise-produced work at or below the decibel levels and within the time periods specified in accordance with OSHA and local ordinances, whichever is more restrictive.
 - 1. Perform construction activities involving repetitive, high-level impact noise only between 8:00 a.m. and 5:00 p.m unless otherwise permitted by local ordinance or by the Engineer.
 - 2. Repetitive impact noise on the property shall not exceed the following dB limitations:
 - 3. Provide sound-deadening devices on equipment and take noise abatement measures that are necessary to comply with the requirements of this Contract, consisting of, but not limited to, the following:
 - a. Use shields or other physical barriers to restrict noise transmission.
 - b. Provide soundproof housings or enclosures for noise-producing machinery.
 - c. Use efficient silencers on equipment air intakes.
 - d. Use and maintain efficient intake and exhaust mufflers on internal combustion engines.
 - e. Line hoppers and storage bins with sound deadening material.
 - f. Conduct truck loading, unloading, and hauling operations so that noise is kept to a minimum.
- R. Contractor shall have a copy of the approved Health and Safety Plant (HASP) on display within the Construction Field Office.

1.01 SECTION INCLUDES

A. This Section includes the general requirements for products that are to be furnished, installed, or otherwise incorporated into the project.

1.02 QUALITY ASSURANCE APPLIES TO ALL PRODUCTS

- A. In addition to the Contractor's warrantees and guarantees on materials and equipment required under the General Conditions of the Contract and the Technical Specifications contained hereinafter, the Contractor shall also be responsible for all materials, equipment, and products that have or is planned to be incorporated into the work.
 - 1. The Contractor shall be responsible for the finished work and that it accurately and completely complies with these Contract Documents.
 - 2. The Contractor shall be responsible for work performed by subcontractors, equipment suppliers, and material vendors.
 - 3. The Contractor shall be satisfied as to the product's performance before it is ordered for installation. At the Contractor's option, he/she shall have tested each product to determine compliance with these specifications.
- B. The Engineer/Architect may check all or any portion of the work and the Contractor shall afford all necessary assistance to the Engineer/Architect in carrying out such checks.
 - 1. Such checking by the Engineer/Architect shall not relieve the Contractor of any responsibilities for the accuracy or completeness of the work.
 - 2. Such checking is a courtesy service being provided by the Owner and does not relieve the Contractor of his/her responsibilities under this Construction Contract.
- C. Should a dispute arise as to the quality of workmanship, equipment or material performance, then the final decision regarding acceptability with these Contract Documents shall be that of the Owner.
- D. At the request of the Engineer/Architect, the Contractor shall promptly provide the services of a competent representative of the manufacturer at the project site, fully equipped and prepared to answer questions, perform tests, make adjustments and to prove compliance with the Contract Documents free of all additional charges. Proof of compliance shall be the responsibility of the Contractor.

1.03 QUALITY ASSURANCE - EQUIPMENT

- A. All material furnished shall be new, and guaranteed free from defects in workmanship, installation, and design.
- B. Equipment shall be products of manufacturers who produce evidence of their ability to promptly furnish any and all interchangeable replacement parts as may be needed at any time within the expected life of the equipment.

PART 2 - PRODUCTS

2.01 MATERIALS AND EQUIPMENT

A. The Owner reserves the right to reject any material or equipment manufacturer who, although he appears to be qualified and meets the technical requirements, does not provide satisfactory evidence indicating adequate and prompt post-installation repair and maintenance service, as required to suit the operational requirements of the Owner.

- B. Whenever it is required that the Contractor furnish materials or manufactured articles or shall do work for which no detailed specifications are set forth, the materials or manufactured articles shall be of the best grade in quality and workmanship obtainable on the market from firms of established good reputation, or, if not ordinarily carried in stock, shall conform to the usual standards for first-class materials or articles of the kind required.
- C. Perform work in full conformity and harmony with the intent to secure the best standard of construction and equipment of the work as a whole or in part.
- D. Items of any one type of material or equipment shall be the product of a single manufacturer.
 - 1. For ease of the Owner in maintaining and obtaining service for equipment and for obtaining spare parts from as few places as possible, to the maximum extent possible, use equipment of a single manufacturer.
 - 2. The Engineer/Architect reserves the right to reject any equipment from various manufacturers if suitable equipment can be secured from fewer manufacturers and to require that source of materials be unified to the maximum extent possible.
- E. Substitute equipment shall not be fabricated nor installed until after written decision to accept request is received from the Engineer/Architect.

PART 3 - EXECUTION

3.01 PREPARATION

- A. Prior to work under any Section, carefully inspect the work of all other prime trades and verify that all such work is in conformance with the Contract Documents and is complete to the point where the work under that Section may properly commence.
- B. Verify that all work can be installed in strict accordance with the drawings and the approved shop drawings. Immediately report discrepancies to Engineer/Architect.
- C. Do not proceed with the work under any Section until these conditions are obtained.

3.02 INSTALLATION

- A. Furnish and install materials and equipment in accordance with the instructions of the applicable manufacturer, fabricator or processors, except as otherwise provided in the Contract Documents.
- B. All work shall be done in a workmanlike manner and set to proper lines and grades. The work shall be square, plumb and/or level as the case may be.
- C. Where performance criteria are specified, do all work necessary to attain the required end results.

3.03 FIELD QUALITY CONTROL

- A. Neither observations by Engineer/Architect nor inspections, tests or approvals by other persons shall relieve the Contractor from his obligations to perform the work in accordance with the requirements of the Contract Documents.
- B. If the Contract Documents, laws, ordinances, rules, regulations or orders of any public authority having jurisdiction require any work to specifically be inspected, tested or approved by some public body, the Contractor shall assume full responsibility therefore, pay all costs in connection

therewith, and furnish the Engineer/Architect with the required certificates of inspection, testing or approval.

3.04 UNCOVERING WORK

- A. Unless otherwise specified or directed by Engineer/Architect, no work shall be covered until it has been observed, tested, photographed, measured, and authorized to be covered by Engineer/Architect.
- B. Tie distances to above ground physical structures as reference points to all underground utilities, conduits, pits, manholes, valves, and pipelines shall be obtained by the Contractor prior to covering the work. Immediately comply with the Engineer/Architect's direction to uncover the work if tie distances were not obtained.
- C. If any work has been covered with Engineer/Architect's consent and Engineer/Architect considers it necessary or advisable that covered work be observed or tested, the Contractor, at Engineer/Architect's request, shall uncover, expose or otherwise make available for observation, or testing as Engineer/Architect may require, that portion of the work in question, furnishing all necessary labor, material and equipment.
 - 1. If it is found that such work is defective, the Contractor shall bear all the expenses of such uncovering, exposure, observation, and testing of satisfactory reconstruction, including compensation for additional engineering and architectural services and an appropriate deductive change order shall be issued.

3.05 DEFECTIVE WORK

- A. The repair, removal, replacement and correction of defective work is a part of this Contract and shall be promptly performed in accordance with the requirements set forth in the General Conditions or other portions of the Contract Documents. All costs in connection with the correction of defective work shall be borne by the Contractor.
- B. Products that fail to maintain the performance or other salient requirements of the Contract Documents, shows undue wear, or other deleterious effects during the maintenance period shall be considered defective.

1.01 SECTION INCLUDES

- A. The Section includes the transportation, handling, storage and protection of products that are to be incorporated into the work.
- B. The procedures for turning equipment over to the Owner for installation by others is also included herein.

1.02 GENERAL

- A. Items shall be delivered as complete assemblies direct from the manufacturer with all internal components intact except where partial disassembly is required by transportation regulations, protection of components, or where physical constraints may exist or be created for the setting of the item.
- B. Coordinate the disassembly and reassembly requirements with the manufacturer. Determine the need and extent of reassembly prior to bid.
 - 1. All labor, material and equipment costs associated with the disassembly and reassembly of the product shall be included in the Contract Price.
 - 2. Where reassembly of equipment is necessary, then the manufacturer shall provide reassembly instruction at the project site.
 - 3. A technician shall be present during the entire reassembly procedure and the manufacturer shall certify, in writing, that the unit was reassembled properly in accordance with instructions provided by the manufacturer and that all as-specified warranties remain in effect.
 - 4. The manufacturer's reassembly inspection time shall be in addition to the field service time specified and shall be included in the Contract Price. This time shall not be eligible for payment under any cash allowance item.
- C. In the case where equipment is to be installed by others, then the supplying contractor shall be responsible for its reassembly. If reassembly is necessary and the unit(s) are to be set inside an enclosure or building, reassemble the equipment inside said enclosure. The equipment once reassembled shall be turned over to the installing contractor as specified below.

1.03 PACKING

- A. Transport products in containers, crates, boxes or similar means such that the products are protected against damage that may occur during transportation.
- B. All parts shall be packaged separately or in container where parts of similar systems are grouped.
- C. Part numbers shall be indicated on the individual part. Use indelible ink to mark part numbers.
- D. All equipment shipments shall be included with a parts list showing a description (name) of the part and the manufacturer's part number.
 - 1. The parts list shall be shipped in a plastic zippered envelope with the words "Parts List" lettered on it in indelible ink.
 - 2. The parts list shall be placed inside the shipping container so that it is on the top of the contents.
- E. Equipment shall be shipped with storage, handling and installation instructions.

- 1. The Engineer reserves the right to withhold payment for equipment delivered to the site until such time as the storage, handling and installation instructions are supplied by the manufacturer.
- 2. In the case where operation and maintenance manuals have been provided by the manufacturer, which includes the installation instructions, then the installation instructions shall also be included with the equipment shipment.
- F. All control panels shall be wood crated.
 - 1. All sides of the control panel shall be covered with 3/4" plywood.
 - 2. The control panel number or name shall be printed on all sides of the crate in 1' high black lettering.
 - 3. The manufacturer's name, Contractor's name and project name shall also be printed on the front of the crate.
 - 4. All control panels and centers shall be packaged with three (3) copies of the approved wiring diagram inside the control panel enclosure in a separate plan holder attached to the inside door. The words "APPROVED FOR CONSTRUCTION" shall be indicated on each page of the wiring diagram.
- G. Delicate instruments and devices, reagents, chemicals, and glassware shall be shipped in packaging normally provided by the manufacturer.
- H. The Contractor shall require the manufacturer to be responsible for the proper packing of all products.

1.04 SHIPPING AND DELIVERY

- A. Product deliveries shall be accompanied with a bill of lading indicating the place of origination and the Contractor's purchase order number.
- B. Inspect shipments immediately upon delivery, to assure compliance with requirements of the Contract Documents and those products are undamaged.
- C. Promptly remove damaged material and unsuitable items from the job site.
- D. Provide equipment and personnel to handle products by methods to prevent soiling; disfigurement or damage.

1.05 STORAGE

- A. Store sensitive products and all spare parts in weather tight, climate controlled enclosures in an environment favorable to product.
- B. Store and protect products in accordance with the manufacturer's instructions.
- C. All other products that are to be installed underground or products such as pipe, valves, and fittings shall be stored outdoors but shall be blocked off the ground and covered with impervious sheet coverings.
- D. Store fabricated products above the ground on blocking or skids.
- E. Store loose granular materials in well-drained areas on solid surfaces to prevent mixing with foreign matter.
- F. Provide adequate ventilation to avoid condensation.

- G. In accordance with manufacturer's instructions protect bearings, couplings, shafts, rotating components, and assemblies. Protection of said equipment shall be continuous until the time the equipment is placed into permanent service.
- H. Arrange storage in a manner to provide easy access for inspection. Make periodic inspections of stored products to assure that products are maintained under specified conditions, and free from damage or deterioration.
- I. Do not store volatile liquids in any building on site.
- J. Storage of products shall be the responsibility of the supplying contractor. The installing contractor shall take all necessary precautions to protect the equipment being furnished by others.
- K. Store with seals and labels intact and legible.
- L. Onsite storage/lay down area shall be adjacent to Building 275, exact location to be coordinated with Navy Yard.

1.06 EQUIPMENT INSTALLED BY OTHERS

- A. All products, except products noted on the Drawings or specified, shall be furnished and installed under this Contract.
 - 1. Only noted or specified products shall be furnished under this Contract for installation by others.
 - 2. If it is not noted on the Drawings or specified, then the product shall be furnished and installed under the Contract.
- B. The Contractor shall furnish these products to the Owner. These products shall be stored as specified above.
- C. The Owner will then advise the installing contractor that the product(s) are ready for installation.
 - 1. In the case where the product is stored in a proper enclosure, but not stored inside the building to be constructed under this project, then the installing contractor shall move the product into the building to a location adjacent to the final location shown on the Drawings.
 - 2. In all cases, the installing contractor shall be responsible for moving from storage, uncrating, anchoring, mounting and installing the product as required by the Contract Documents.
- D. The Contractor and installing contractor(s) shall be present at the time the equipment is turned over to the Owner. Immediately thereafter, the Owner will turn the product over to the installing contractor for installation.
- E. The Owner, Contractor, Engineer/Architect and the installing contractor shall inspect the condition of the product at this time.
 - 1. Any defects in the product will be noted and the Contractor will be advised to make all repairs immediately.
 - 2. The installing contractor shall still be required to install the product if the damage is deemed cosmetic by the Engineer/Architect.
 - 3. The manufacturer's installation instructions or wiring diagram shall be turned over to the installing contractor at this time by the Contractor.
 - 4. Any damage occurring to the product during moving, setting and mounting the unit(s) shall be the responsibility of the installing contractor.
 - 5. The Contractor is advised to take photographs to document the condition prior to it being turned over to the installing contractor.

- 6. The installing contractor is advised to take photographs to document the condition prior to its acceptance.
- F. The supplied unit(s) remain the property of the Contractor until final acceptance of the work.
- G. Any damage caused to the unit(s) due to improper installation, workmanship, and non-compliance with the manufacturer's written installation instructions shall be the responsibility of the contractor who caused said damage. The burden of proof shall rest with the supplying Contractor.
- H. In the event the Contractor discovers misuse, abuse or improper installation of the unit(s) by the installing contractor, then he shall immediately notify the Engineer/Architect in writing. The Engineer/Architect will investigate the accusations and make a determination. The Engineer's determination shall be binding and agreed to by both parties.
- I. If the Engineer's determination substantiates the accusations of the Contractor, then the Contractor shall install the unit(s), the costs for which will be paid for as extra work. All costs associated with the extra work change order, including engineering and attorney fees of the Owner and Contractor will be deducted from money due the installing contractor.

1.07 PROTECTION OF WORK

- A. The Contractor shall protect the installed work. All costs for protection shall be borne by the Contractor. Provide coverings as necessary to protect installed products from damage, from traffic and subsequent construction operations. Remove when no longer needed.
- B. Cover and protect equipment from dust, moisture or physical damage. Protect finished floor surfaces prior to allowing equipment or materials to be moved over such surfaces. Maintain finished surfaces clean, unmarred and suitably protected until accepted by the Owner.
- C. Additional time required to secure replacements and to make repairs will not be considered by the Engineer/Architect to justify any extension in the Contract Time of Completion. In the event of the damage, promptly make replacement and repairs to the approval of the Engineer at no additional costs.

PART 2 - PRODUCTS

2.01 NOT USED

PART 3 - EXECUTION

3.01 NOT USED END OF SECTION

1.01 GENERAL

- A. The intent of this Section is to have Contractor perform his Work in such a manner that continuous, uninterrupted treatment of the electrical service and all essential building systems and facilities are maintained operational throughout the construction period.
- B. Except for the scheduled shutdowns specified in this Section and in other Contracts, the existing building will be maintained in continuous operation by the Brooklyn Navy Yard (BNY) and any other Contractors working within or in the immediate area of the building during the entire construction period under all Contracts. Work under this Contract shall be so scheduled and conducted by Contractor such that it will not impede the operation of any building system or create potential hazards to operating equipment, building personnel, or any other Contractors working on this or other Contract Work. In performing the Work shown and specified, Contractor shall plan and schedule Work to meet both constraints outlined in this Section and building operating requirements.
- C. The work covered in the following paragraphs may not be all inclusive of all work which may affect building operations. All operations which involve the demolitions, isolation or tie in to existing building equipment and/or systems will be submitted for approval.
- D. Contractor has the option of providing additional temporary facilities that can eliminate a constraint, provided it is done without additional cost to the County, and provided that it does not require any other Contractor to perform additional work, and provided that all requirements of these Specifications are fulfilled.
- E. The Contractor shall not shut off or disconnect any operating system of the Building. All Building equipment operation and equipment shutdowns shall be executed by the BNY. The Contractor shall put in place a Lock Out Tag Out (LOTO) system for the safety of their workers in conjunction with the BNY's LOTO.
- F. This Section of the Specifications contains several references to equipment, piping, ductwork, conduit, cable, material and appurtenances to be removed or reinstalled. The Contractor shall also refer to the Drawings and other applicable Sections for definition of the equipment, piping, ductwork, conduit, cable, material and appurtenances to be removed and turned over to the County and stored on site, or to become the property of the Contractor and removed from the site.

1.02 GENERAL CONSTRAINTS

- A. Paragraph 1.05 of this Section specifies the sequence and shutdown duration (where applicable) for Building units which are to be taken out of service. The operational status of new or existing "units", "utility systems", etc. other than the designated "units", "utility systems", etc. shall not be interrupted by the Contractor during the specified time periods. New "units", "utility systems", etc. may only be used after the specified testing and acceptance of the "units", "utility systems", etc.
- B. The following constraints shall be applied to all equipment and appurtenant utility systems on the Building site.
 - 1. Load limits on Access Roads: Existing and new underground facilities such as electrical duct banks, pipelines, etc., in, under and crossing BNY roads have been designed for a maximum wheel load of AASHTO H-20. The Contractor shall not exceed this weight limit.
 - 2. Access to Site: An unobstructed traffic route through all BNY gates must be maintained at all times.

- 3. Internal Roads Access: Vehicular access to all buildings and facilities must be maintained at all times.
- 4. Personnel Access: BNY Personnel and other Contractors must have access to all areas that remain in operation throughout the construction period.
- 5. Potable Water System: The existing potable water system shall be kept in operation at all times.
- 6. Plumbing Facilities: Sanitary facilities in the existing structures shall be operational at all times for BNY operating personnel and employees. All other building plumbing systems such as roof and floor drains, pumping, etc. shall be maintained for all structures.
- 7. Storm Drainage: Storm drainage on the site shall be operational at all times.
- 8. Building Heating and Ventilating: In the Contractor's work areas and areas affected by the Contractor's operations, building heating and ventilating shall be both provided and maintained by the Contractor. Temperatures to be maintained in any area occupied by BNY Personnel or other Contractors such as offices, toilet rooms, etc., shall be at least 65°F. Temperatures to be maintained in all other interior Building areas, whether new, existing or temporary, shall be maintained at a minimum of 55°F.
- 9. Power, Light and Communication Systems: Electric power, lighting service and communication systems shall be maintained in uninterrupted operation in all areas unless otherwise shown or specified.
- 10. Pipes:
 - a. Unless otherwise specified, the contents of pipes undergoing modifications shall be transferred to the Plant drain sewer system using hoses, piping, or pumps (if hydraulic conditions so require them) by the Contractor whose Work requires the draining. Exception: if contents of pipe not permitted to be discharged to normal drain, Contractor is responsible to contain, collect, and dispose of in a manner acceptable to the local authority having jurisdiction.
 - b. If a drain is not available on the pipe to be drained, then a wet tap shall be made by the Contractor using an approved tapping saddle and valve. No uncontrolled spillage of a pipe's contents shall be allowed.
 - c. All spillage shall be immediately washed down by the Contractor to the floor drains.
- 11. Dead End Valves or Pipe: The Contractor shall provide blind flanges on all valves or pipe that dead-end a line on a temporary or permanent basis.
- 12. Dead End Conduit:
 - a. Empty conduit stubbing up from floor shall be cut flush with floor and patched.
 - b. Empty conduit (spare or not) above finished floor shall be provided with cap, removable for future use.

1.03 SHUTDOWNS

- A. General:
 - 1. Shutdown shall be defined to indicate that a portion of the normal operation of a Building system has to be suspended or taken out of service in order to perform the specified work. For each shutdown, the Contractor shall compile an inventory of its labor and materials required to perform the tasks, an estimate of the time required and a written description of steps required to complete the tasks. The inventory, the estimate and written procedure shall be submitted to the Owner and Owner's Representative for review 30 calendar days prior to the proposed start date of the shutdown. The Contractor shall also request in writing, from the BNY, approval for each shutdown a minimum of fourteen calendar days prior to the proposed date. No shutdown shall be initiated until the list of materials and labor is verified on site at least one week prior to the proposed start date.
 - 2. Work required which will interrupt the normal Building operations shall be accomplished at such times that will be convenient to the BNY and other Contractors on site.
 - 3. The Contractor shall provide 7-day advance notice of needed shutdowns to all BNY Personnel.
 - 4. The Contractor shall also have on hand, located in close proximity to the Work area, all tools, equipment and materials, both temporary and permanent, necessary to complete

each work category, without interruption. Adequate numbers of personnel shall be scheduled for each shutdown, so that the work may be accomplished within the specified time frame. Prefabrication of all piping, ductwork and other assemblies shall be completed to greatest degree possible, prior to any shutdowns. The BNY shall be satisfied that the Contractor has complied with these requirements, to the fullest extent possible, before shutdowns will be authorized.

B. Shutdowns of Mechanical and Electrical Systems: The Contractor and the BNY shall each lock out and tag circuit breakers and switches operated by the BNY, and shall check cables and wires to be sure that they are deenergized to ground potential before Work begins and that all mechanical isolation devices are functional. Upon completion of the Work, the Contractor shall remove the locks and tags and advise the BNY that the facilities are available for use. The County will then remove their locks and place facilities back into use.

1.04 OVERTIME

A. Overtime Work by the Contractor necessary to conform to the requirements of this Section and related Sections shall be performed by the Contractor, and the Contractor shall make no claims for extra compensation as a result thereof.

1.05 MAINTENANCE OF BUILDING OPERATIONS (MOBO) AND SEQUENCE OF CONSTRUCTION

- A. In order to maintain continuous Building operation during construction, a MOBO Description Section is included after this Section. The category order and item order within each category are not intended as an exact sequence of work or a listing of priorities. However, within each item procedural steps, time constraints and milestone dates may be outlined and are intended to recommend a sequence and timing in order to maintain the continuous operation of the Plant.
- B. The Contractor shall note that all necessary shutdowns may not be included in the MOBO Descriptions. As the need for additional shutdowns becomes evident, the Contractor shall notify the Engineer, who with assistance and approval of the BNY, will arrange for necessary shutdowns.
- C. Contractor is advised that work in multiple areas of the Building performed simultaneously may be required in order to complete the entire scope of the Contract within the allotted time.

REFER TO FOLLOWING "DETAILED MOBO DESCRIPTIONS".

1.01 SECTION INCLUDES

- A. Cleaning during the progress of the work
- B. Cleaning prior to final payment

1.02 SCHEDULING

A. Perform final cleaning at least five (5) days before the date set for ceremonies to dedicate the new facility wherein the Owner will provide tours to the general public and/or dignitaries. The site shall be clean, organized, and totally free of construction debris, tools, and equipment.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Cleaning materials shall be appropriate to the surface and materials being cleaned.
- B. Provide pads to protect finished surfaces from cleaning materials.

PART 3 - EXECUTION

3.01 PREPARATION

A. Post signs to advise building occupants if wet and/or slippery floor conditions exist during cleaning operations.

3.02 PROGRESS CLEANING

- A. Keep all buildings, enclosures, and confined areas where work is being performed under the Contract free from unattended combustible materials.
- B. Remove rust spots as they develop.

3.03 FINAL CLEANING

- A. Remove dust, dirt, grease, stains, paint drips and runs, plastic, labels, tape, glue, rope, and other foreign materials from visible interior and exterior surfaces.
- B. Do not move dust from spot to spot. Remove directly from the surface on which it lies by the most effective mean such as appropriately treated dusting cloths or vacuum tools. When doing high cleaning, do not allow dust to fall from high areas onto furniture and equipment below.
- C. Dismantle and remove all temporary structures, scaffolding, fencing, and equipment. Remove waste materials, rubbish, lumber, block, tools, machinery, and surplus materials.
- D. Perform the following prior to final payment:
 - 1. Broom clean all exterior concrete surfaces and vacuum clean all interior concrete surfaces.
 - 2. Dust and spot clean painted and vinyl covered walls.
 - 3. Clean and polish all unpainted metal on doors such as trim, hardware, kickplates and doorknobs.
 - 4. Repair, patch, and touch-up marred surfaces to specified finish and to match adjacent surfaces.

- 5. Remove foreign material from exterior masonry.
- 6. Clean and polish all stainless steel surfaces, including control panels supplied under this Contract.
- 7. Remove all rust spots and stains from new and pre-existing concrete, painted surfaces, and all other surfaces.
- 8. Inspect interior and exterior surfaces, and all work areas, to verify that the entire work is clean and ready for use by the Owner. The project will not be considered substantially complete until all final cleaning has been performed.
- 9. Vacuum the inside of all control panels provided under this Contract after the panel has been wired.

1.01 SECTION INCLUDES

- A. Work of this Section includes the following:
 - 1. Starting systems
 - 2. Testing, adjusting, and balancing
 - 3. Updating of manufacturer's operations and maintenance manuals and wiring diagrams
- B. Work of this Section also includes stipulated man-hours that shall be provided by the **Prime Electrical Construction Contractor** for startup participation of equipment and systems.

1.02 STARTING SYSTEMS

- A. The Contractor shall coordinate, schedule, and sequence the start-up of various equipment and systems.
- B. Where the start-up of a system or piece of equipment is dependent upon the start-up of other system(s) or equipment, then the Contractor shall schedule and sequence the start-ups to coincide.
- C. Notify the Architect/Engineer at least 14 calendar days prior to the start-up of each item or system so that he can schedule the startup with the Owner and utilities.
- D. Where applicable, verify that each piece of equipment or system has been checked for proper:
 - 1. lubrication,
 - 2. drive rotation,
 - 3. belt tension,
 - 4. motor starter heater size,
 - 5. fuse size,
 - 6. water pressures,
 - 7. terminal connections,
 - 8. control sequence,
 - 9. for conditions which may cause damage or delay the start-up procedure.
- E. Verify that the equipment has been installed in accordance with the manufacturer's requirements.
- F. Complete all pre-startup checklists that may be required by the system vendor.
 - 1. In the event that start-up activities are delayed as a result of the Contractor's failure to properly check the completed installation and a manufacturer's representative is on the job site waiting for corrections to be made, then the Architect/Engineer may, at his/her sole discretion, postpone start-up until such time as the corrections have been made without any extra costs.
 - 2. The Owner may deduct from money due the Contractor the excess cost of engineering associated with having the Architect/Engineer present during the start-up.
 - 3. The deduction shall be equal to the Architect/Engineer's effective billing rate times the total number of hours delayed during the start-up activities.
- G. Verify that tests, meter readings, and specified electrical characteristics agree with those required by the equipment or system manufacturer.
- H. Verify that wiring and support components for equipment are complete and tested.
- I. Execute start-up under supervision of applicable Contractor's personnel in accordance with manufacturer's instructions.

- J. The Contractor shall have the job site superintendent present during all start-up activities.
- K. Provide manufacturer's authorized technician at the site when specified and in accordance with the requirements contained in Section 014500 Quality Control.
- L. Submit manufacturer's start-up reports (MSR's) in accordance with Section 013300.

1.03 STIPULATED STARTUP PARTICIPATION FOR PRIME ELECTRICAL CONSTRUCTION CONTRACTOR

- A. The **Electrical Construction Contractor** shall provide the services of the job site foreman or superintendent who shall participate in the startup of equipment or systems that were furnished by others so as to achieve proper and sustained service.
- B. The Electrical Construction Contractor shall include in the Contract price **TWO HUNDRED FORTY (240)** man-hours of participation service exclusively dedicated for providing startup services for equipment furnished.
 - 1. The Owner reserves the right to receive a credit for each unused hour at the prevailing wage in effect at the time, said amount not being less than **Seventy Five Dollars (\$75)** per hour in any case.
 - 2. This service shall be provided when directed by the Architect/Engineer. Sufficient advance notice will be provided.
- C. The **Contractor** shall provide a separate line item in the Schedule of Values for this service.
 - 1. Provide with each requisition for payment, concerning this stipulated amount, a field report documenting the equipment item or system, date(s) of service, name of Contractor's worker(s), hour(s) worked, brief description of work performed during startup, and the prevailing wage rate paid them.
 - 2. The field report shall be signed by the Architect/Engineer's field representative.
- D. Requisitions for payment out of this stipulated amount will not be processed without an executed field report unless proof of manhours expended can be proved otherwise.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

NOT USED

1.01 SUBMITTALS

- A. Submit the following items to the Engineer/Architect with the final application for payment:
 - 1. Approved change orders.
 - 2. Maintenance Bond (period beginning date to match the date of final payment) prepared in accordance with the Contract,
 - 3. Utility company signoffs and inspection approvals, if applicable.
 - 4. Federal, state, county, town and local signoffs and inspection approvals, where applicable.
 - 5. Certified Payroll records with affidavits of labor.
- B. All documents shall be complete, signed, dated, and notarized (where applicable) and be subject to the Engineer/Architect's acknowledgment of receipt or approval.
- PART 2 PRODUCTS
- 2.01 NOT USED

PART 3 - EXECUTION

3.01 NOT USED END OF SECTION

1.01 SECTION INCLUDES

- A. This Section specifies the requirements for Operations and Maintenance Manuals required to be prepared by system suppliers and equipment manufacturers.
- B. The Contractor shall submit Operations and Maintenance Manuals for all equipment.
- C. Where the technical specifications call for the submission of manuals, said manuals shall be prepared in accordance with the requirements contained herein. It being understood that manuals shall be submitted for all equipment even if it is not specifically called out in the specifications.

1.02 MANUAL CONTENTS AND FORMAT

- A. All Operations and Maintenance Manuals shall be as specified hereinafter.
- B. The binder shall be 8 1/2" x 11", metal hinge, vinyl, large capacity by National or Equal. It shall show the name of the manufacturer or supplier and project name on the spine of the binder.
- C. A cover shall be provided showing the names of the Owner, Engineer/Architect, Contractor, and Manufacturer.
 - 1. It shall show the Contractor's order number and manufacturer's project number.
 - 2. The address of the manufacturer, service station telephone number, project title, contract number, and year shall also be shown.
- D. Provide tabbed color dividers for each separate product and system.
 - 1. The name of the product shall be typed on the tab.
 - 2. A separate tab shall also be provided for information such as troubleshooting instructions, spare parts list, etc.
- E. An index shall be provided in the back of the binder, with a separate tab, providing a quick way for the operator to find key and important topics contained in the manual.
- F. A separate listing for all charts, graphs, tables, figures and shop drawings shall be provided directly following the table of contents.
- G. Each manual shall contain one (1) copy of all shop drawings deemed in compliance with the Contract Documents by the Engineer submitted for the equipment or system for which the manual is prepared.
 - 1. Only these shop drawings shall be included in the manual.
 - 2. All shop drawings larger than 8 1/2" x 11" shall be folded and placed in a heavy duty, top loading plastic sheet protector with the title of the drawing showing; one (1) drawing per protector page.
- H. For systems being furnished with control panels, each manual shall contain a catalog cut for every electrical device installed inside the control panel or motor control center.
- I. Where emergency generator(s) are included as work of this Contract, the manufacturer's standard manual will be allowed if the manual clearly shows the instructions for the particular model of generator. Cross out chapters and paragraphs that do not apply to the Owner's generator.

- J. Where manuals are prepared for treatment systems for water or wastewater, a process chapter, written in plain language for the operators, shall be prepared by the manufacturer providing the following:
 - 1. A general discussion regarding the theory of the process.
 - 2. A specific discussion relating the theory to the project as designed and constructed. Provide capacities, sizes, loading rates, application criteria, design values, and design assumptions.
 - 3. Provide model numbers for equipment comprising the system.
 - 4. Provide figures, tables, and graphs to assist the operator in understanding the operation of the treatment system.
 - 5. Where operator interfaces are provided, provide step-by-step instructions for changing a process control variable such as set points.
 - a. The instructions shall be numbered and written such as "press", "hold" "scroll", etc.
 - b. Each operator interface instruction sheet shall be laminated and placed in the binder.
 - c. Another laminated sheet shall be provided and placed inside the control panel.
- K. Each manual shall contain the following as a minimum:
 - 1. Table of contents
 - 2. Final version of the warranty statement approved by the Engineer/Architect
 - 3. Nameplate data of each component, year of installation, contract number and specification number
 - 4. Name, address and telephone number of the manufacturer and the manufacturer's local representative(s)
 - 5. Installation instructions
 - 6. Operation instructions including adjustments, the interrelation of components and the control sequence describing break-in, start-up, operation and shutdown
 - 7. Emergency operating instructions and capabilities
 - 8. Maintenance requirements include routine procedures and guide for preventative maintenance and troubleshooting; disassembly, repair and reassembly instructions; and alignment, adjusting, balancing, and checking instructions
 - 9. Troubleshooting guide and corrective maintenance (repair) procedures for all electrical and mechanical equipment. These guides shall list the most frequent and common problems, together with the symptoms, possible causes of the trouble, and remedies
 - 10. Drawings (pictures or exploded views) which clearly depict and identify each part, suitable for assembly and disassembly of entire system and each component
 - 11. Wiring and control diagrams, if applicable
 - 12. Panelboard circuit directories including electrical service characteristics, if applicable
 - 13. Part list with current prices; ordering information; and recommended quantities of spare parts to be maintained in storage
 - 14. Charts of valve tag numbers, with location and function of each valve, keyed to the process and instrumentation diagram prepared as part of the Contract Documents
 - 15. Name, address, and telephone number of nearest parts supply house and nearest authorized repair service center.
 - 16. List of recommended spare parts and the recommended number of each per unit and per group of units.
 - 17. Approved shop drawings, submittals and product data.
- L. Submit two (2) copies of a preliminary draft manual at least fourteen (14) calendar days prior to the date set for start-up.
 - 1. The Engineer/Architect will review the manual for content and compliance with these specifications.
 - 2. Written comments will be provided, but the manual will not be returned.
 - 3. One (1) manual will be used at start-up, to record changes that should be made to the final manual.

- 4. This copy of the manual will be retained on the site until such time as the final, updated manual is provided.
- M. Two (2) weeks after the date the unit was placed into service and the Owner has gained beneficial use, submit two (2) paper and two (2) electronic copies of the final updated Operations and Maintenance Manual. Refer to Section 017500 - Starting and Adjusting for requirements related to updating the manual(s).
- N. Where installation instructions are not included with the manual, they shall be shipped at least ten (10) days prior to the date the equipment is scheduled for installation.

1.03 RETAINAGE

A. The Engineer will retain from payment due the Contractor, for failure to submit manuals as specified, an amount equal to 5% of the scheduled value for the equipment or system for which the manual applies. This Contract requirement only applies when a manual is specified to be provided in the Technical Specifications for a particular system or piece of equipment.

PART 2 - PRODUCTS

2.01 NOT USED

PART 3 - EXECUTION

3.01 NOT USED

1.01 SECTION INCLUDES

A. This Section includes:

- 1. Maintenance of documents
- 2. Recording of record information
- 3. Submission of record documents
- B. Work of this section also includes the furnishing of underground pipeline documentation.

1.02 PLANS AND SPECIFICATIONS FURNISHED TO THE CONTRACTOR

- A. Two (2) complete sets of Contract Documents (plans, specifications and addenda) will be furnished to the Contractor upon request.
- B. Additional sets will be furnished to the Contractor at \$300 per set.

1.03 MAINTENANCE OF DOCUMENTS

- A. The Contractor shall maintain at the site one (1) set of the following: drawings, specifications, addenda, change orders, approved shop drawings, test reports, operations and maintenance manuals, and shop drawing log.
- B. The Contractor shall make these documents available for use by the Owner, Engineer/Architect, regulatory agencies and other parties designated by the Owner.
- C. Provide a drawing rack for storage of plans.
- D. Maintain these documents in a clean, dry, legible condition throughout the entire contract period.
- E. This field set of documents shall returned to the Engineer/Architect for scanning.

1.04 RECORDING OF RECORD INFORMATION

- A. The Contractor shall include a lump sum amount in the bid amount for preparation of record drawings.
 - 1. Stipulated amount in the bid item will be released when the record drawings have been accepted by the Engineer.
 - 2. Satisfactory evidence shall be provided by the Contractor demonstrating compliance with these specifications and said drawings have been delivered and deemed in compliance with the specifications by the Engineer/Architect.
 - 3. Progress payments will be allowed against the line item in the Schedule of Values only if record documents are considered accurate and up-to-date by the Engineer.
- B. The contractor shall be required to keep accurate record drawings, in hard copy format, as well as Autocad 2020 or newer digital format, of the work actually performed which is in accordance with the contract documents and that which deviates from them.
- C. As work progresses, the contractor shall maintain an on the field set of hard copy drawings, a complete and accurate set of field notes clearly delineating all work as it is actually installed. This set of drawings shall be available at all times for the Engineer/Architect to review and shall be examined at all jobsite meetings.
- D. Do not permanently conceal any work until required information has been recorded.

- E. Final record drawings shall be hard copy format and AutoCad 2020 or newer digital format, 24" x 36", completed by a competent draftsman or CAD operator with the following information as a minimum:
 - 1. A dimensioned drawing of all equipment installed.
 - 2. Field changes of dimension and detail.
 - 3. Changes made by Change Order.
 - 4. Clarification plans not on original contract.
- F. At final contract closeout Engineer/Architect will review preliminary set of final record drawings. After approval of this submission, the contractor will be required to submit one (1) set of hard copy, 24" x 36" drawings and one (1) digital DVD disc including all as-built drawings in AutoCad 2020 or newer format as detailed above. No portion of the line item bid amount in the proposal for the record drawings will be released until final record drawings have been submitted and approved. No exceptions.

1.05 SUBMITTAL OF RECORD DOCUMENTS

- A. At completion of project prior to the final project close-out meeting, deliver marked-up record documents to the Engineer.
- B. Accompany submittal with transmittal letter, containing:
 - 1. Date.
 - 2. Project title and number.
 - 3. Contractor's name and address.
 - 4. Title and number of each record document.
 - 5. Certification that each document as submitted is complete and accurate.
 - 6. Signature of Contractor or its authorized repre-sentative.
- C. Upon completion of the work, Contractor shall prepare and furnish the Engineer/Architect a set of marked up prints of the as-built drawings for review, with all changes conspicuously circled or otherwise emphasized.
- D. Prior to final payment, Contractor shall conform the drawings to the comments made by the Engineer/Architect and then provide the Owner a complete reproducible set of as-built drawings on 24" x 36" paper and a set in digital CD-ROM AutoCad 2020 or newer format.
- E. As-built drawings shall be the same size as the contract drawings, with 1/2 inch margins space on three sides and a 2 inch margin on the left side for binding. Each drawing shall bear the legend "AS-BUILT" and the name of the Contractor in heavy black lettering 1/2 inch high and be certified as complete and accurate.
- F. As a convenience, Engineer/Architect will make available to the Contractor electronic media of the contract drawings for the sole purpose of the Contractor preparing as-built drawings. Electronic media made available is without guarantee of compatibility with the Contractor's software or hardware. If the Contractor wishes to take advantage of this offer, the Contractor will be required to execute an indemnification and hold harmless agreement with the Engineer/Architect and pay the Engineer/Architect \$150.00 per contract set to cover the cost of providing electronic media. Payment shall be by check, payable to H2M architects +engineers, in advance of picking up the requested materials. Electronic media shall be returned to the Engineer/Architect upon acceptance of the as-built drawings by the Owner.

1.06 RELATED DOCUMENTS

A. Provide certificate of release of liens if requested by the Engineer.

PART 2 - PRODUCTS

2.01 NOT USED

PART 3 - EXECUTION

3.01 NOT USED END OF SECTION

1.01 SECTION INCLUDES

A. The Section includes the requirements for delivering spare parts specified to be furnished under the provisions of the Contract Documents.

1.02 QUALITY ASSURANCE

A. Spare parts shall be delivered as complete assemblies direct from the manufacturer such that the part is fully functional and ready to be installed.

1.03 DELIVERY, STORAGE AND HANDLING OF SPARE PARTS

- A. Comply with the requirements of Section 016500 for packing, delivery, storage and handling requirements for all parts delivered to the site of the work.
- B. All spare parts required to be furnished under a Section of the Specifications shall be packaged in one separate box, crate or container with the words "SPARE PARTS" lettered on all sides of the container.
- C. The equipment name or system name for which the spare parts are being provided shall also be lettered on the container.
- D. A separate packing list for the spare parts shall be included in the container.
- E. The Contractor shall store all spare parts indoors immediately upon delivery of the spare parts to the site. Spare parts will not be accepted by the Owner/Architect/Engineer if the spare parts have been stored outdoors for more than 8 hours upon delivery to the site.
- F. The storage location shall be secure.

1.04 TURN OVER OF SPARE PARTS

- A. Spare parts shall be turned over to the Owner/Engineer approximately two (2) weeks prior to the Architect/Engineer's preparation of the Final Punch List.
 - 1. The <u>Certificate of Substantial Completion</u> will not be issued until all spare parts are delivered.
- B. The following procedure shall be followed:
 - 1. The Contractor shall provide a formal letter of transmittal listing the name or description of the part, part number, model number, manufacturer (or supplier), and system component name and the Section where it was specified to be provided.
 - 2. Two (2) counterparts of the letter shall be provided.
 - 3. The Contractor shall turn each part individually over to the Owner/Architect/Engineer.
 - 4. The Owner/Architect/Engineer will initial next to the part description on each counterpart of the transmittal letter.
 - 5. The initials represent that the part was received.
 - 6. One transmittal counterpart will be returned to the Contractor.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

NOT USED

1.01 SECTION INCLUDES

- A. Work of this Section includes the requirements for demonstrating and training of installed systems, equipment, and products.
- B. Manufacturer field services and the credit for unused service time is also included herein.

1.02 MANUFACTURER'S FIELD SERVICES

- A. When specified in individual specification sections require field services to be provided, said services shall be provided by qualified, authorized and factory trained representative(s) of the manufacturer (supplier).
- B. Field services shall generally consist of:
 - 1. installation supervision,
 - 2. verify terms of the manufacturer's warranty,
 - 3. equipment and system calibration,
 - 4. startup supervision,
 - 5. and operation and maintenance instructions to the Owner's employees.
- C. Such services do not include service time to correct a factory fault, correct problems resulting from a factory wiring or control logic error, or errors caused by poor or improper installation by the Contractor.
- D. Sale representatives are not acceptable.
- E. The time specified to be provided under the specification sections shall be exclusive of travel time to and from the facility or site. For the purposes of this Contract, one (1) day shall be defined as eight (8) hours exclusive of breaks or mealtime.
- F. The times specified to be provided by the manufacturer does not relieve the manufacturer from providing sufficient service time to place the equipment or systems into satisfactory operation and to obtain the specified performance. The manufacturer shall provide, as a minimum, the times specified in the Specification Sections.
- G. If for any reason, the specified service days are not used, then the Owner shall receive a credit equal to [\$500.00 (FIVE Hundred Dollars and Zero Cents)] for each unused field service day specified. The Contractor shall include, as a minimum, [\$20,000 (twenty thousand dollars and zero cents)] in the amount bid for manufacturer supplied field service for equipment furnished and installed under Contract G. Said amount of [\$20,000] being equal to [40] days of service at [\$500] each day.
- H. A change order to the Contract reducing the Contract Price, by the dollar amount equivalent to the unused field service days, will be issued.
- I. Submit manufacturers' startup reports (MSR's) in accordance with the requirements contained in Section 013300 Submittals.

1.03 SUBMITTALS

A. The Contractor shall prepare a list of all manufacturer specified field time required by the technical specifications. Compile this summary listing and submit it to the Engineer for review in accordance with the requirements contained in Section 013300.

B. Manufacturer's Startup Reports

1.04 QUALITY CONTROL

- A. The Contractor shall adhere to all instructions provided by the manufacturer's authorized representative.
- B. All verbal instructions necessary to satisfy performance of the equipment or the system shall be immediately provided by the Contractor. The manufacturer shall document all verbal orders in writing at a time suitable to the Contractor.
- C. All written instructions provided in operation, maintenance, and installation guides and manuals, provided by the manufacturer of such equipment and or system, shall be complied with by the Contractor.
- D. The Contractor shall comply with all manufacturer requirements such that written or implied warranties remain in full force during the time period so specified elsewhere in the technical specifications.
- E. Should manufacturer's instructions conflict with Contract Documents, request clarification from Engineer before proceeding.
- F. Actions and/or non performance by the Contractor that may void manufacturer warranties shall not constitute a release of the specified warranty, and all warranty claims made by the Owner shall be paid for by the Contractor as if the manufacturer's warranty was still in effect.

1.05 SCHEDULING - FIELD SERVICES

- A. The Contractor shall arrange field service on dates acceptable to the Owner and Architect/Engineer.
- B. The service visits shall be scheduled at least 2 weeks in advance so that the Owner and Architect/Engineer can adequately staff the date.
- C. Operator training will not be allowed until such time as the Manufacturer's Operation and Maintenance Manuals have been supplied and approved by the Architect/Engineer.
 - 1. The field service technician shall review the contents of the manual with designated employees of the Owner.
 - 2. Field services will not be deemed provided until the MSR is provided.

1.06 DEMONSTRATION AND INSTRUCTIONS

- A. Demonstrate operation and maintenance of products to Owner's personnel prior to date of Substantial Completion.
- B. Utilize manufacturer's and vendor's Operation and Maintenance Manuals as basis for instruction. Review contents of the manual with the Owner's personnel in detail to explain all aspects of operation and maintenance.
- C. Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, maintenance, and shutdown of the equipment or of the system.
- D. Prepare and insert additional data in operations and maintenance manuals when need for additional data becomes apparent during instruction.

- E. The Contractor shall arrange to have the manufacturer's Operation and Maintenance Manuals updated with information that has been added during start-up activities.
- F. The final manual shall contain the most recent information and reflect all operational and maintenance aspects of the final installed and functioning system or equipment component of the system.
- G. Any changes to control panel wiring diagrams or interconnection wiring schematics shall be made and new prints provided as an update to previously approved manuals.
- H. Manufacturer field time shall be as specified in individual Sections of the Technical Specifications.
- I. For control panels, explain the control sequence, timing structure, and safety precautions when working inside the panel, terminal wiring system, PLC program, if applicable, operator interface(s) and control logic.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

NOT USED

1.01 RELATED DOCUMENTS

A. Drawing and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. Asbestos, Lead, PCB, and Universal Survey performed by H2M architects + engineers dated 11/21/2024 consisting of 34 pages. Additional, Asbestos NYC DEP ACP5 report indicating no asbestos being impacted by the scope of work. This Section includes the following:
- B. Related Sections include the following:
 - 1. Section 028304 Handling of Lead Containing Materials.
 - 2. Section 028400.11 Mannagement of Polychlorinated Biphenyl (PCB) Equipment.
 - 3. Section 028600 Disposal of Hazardous Waste
 - 4. Section 028700 Removal and Disposal of Universal Waste and Fluorescent Lamps

PART 2 - PRODUCTS

2.01 NOT USED

PART 3 - EXECUTION

3.01 NOT USED

1.01 SUMMARY

A. This Section specifies the requirements for the detection and prevention of lead dust contamination of lead dust control work areas and areas adjacent to them, protection of workers, post-work cleaning, pre-disposal testing and appropriate disposal of removed material.

1.02 RELATED SECTIONS

- A. Section 011100 SUMMARY OF WORK.
- B. Section 028200 ASBESTOS REMEDIATION.

1.03 REFERENCES

- A. New York State Department of Environmental Conservation (DEC) 6NYCRR:
- B. Part 360 Solid Waste Management Facilities.
- C. Part 364 Waste Transporter Permits.
- D. Part 370 Hazardous Waste Management System-General.
- E. Part 371 Identification and Listing of Hazardous Wastes.
- F. Part 372 Hazardous Waste Manifest System and Related Standards for Generators, Transporters and Facilities.
- G. Part 373 Hazardous Waste Management Facilities.
- H. New York State Department of Transportation (DOT): Follow all regulations of 49CFR Part 100 through 199.
- I. Occupational Safety and Health Administration (OSHA): Lead Exposure in Construction: Interim Final Rule 29 CFR 1926.62.
- J. U.S. Department of Housing and Urban Development (HUD): Guidelines for evaluation and control of Lead based paint hazards: Title Ten of Housing and Community Act of 1992.
- K. U.S. Environmental Protection Agency (EPA): Resource Conservation and Recovery Act (RCRA) Section 3004 Hazardous and Solid Waste Amendments.
- L. U.S. Environmental Protection Agency (EPA): Toxicity Characteristics Leaching Procedure EPA Method 1311.

1.04 DEFINITIONS

- A. Authorized Personnel: Facility or the Director's Representative, and all other personnel who are authorized officials of any regulating agency, be it State, Local, Federal or Private entity who possess legal authority for enforcement or inspection of the work.
- B. Containment: The enclosure within the building which establishes a contaminated area and surrounds the location where lead remediation is taking place and establishes a Lead Control Work Area.

sampling and testing. Levels shall be recorded in mg/ft2.

- C. Clearance Criteria: Shall be determined and established by an independent testing lab hired by the Director's Representative, conforming to all standards set forth by all authorities having jurisdiction, mentioned in the references, and issue the certification of cleaning. At a minimum no single sample shall have reading levels greater than the levels established by pre-work
- D. Fixed Object: Mechanical equipment, electrical equipment, fire detection systems, alarms, and all other fixed equipment, furniture, fixtures or other items which cannot be removed from the work area.
- E. HEPA: High Efficiency Particulate Absolute filtration efficiency of 99.97 percent down to 0.3 microns. Filtration provided on specialized vacuums and air filtration devices to trap particles.
- F. Lead Based Paint (LBP): Paints or other surface coatings that contain lead equal to or greater than 1.0 milligrams per square centimeter or 0.5 percent of lead by weight.
- G. Lead Dust Control Work Area: A cordoned off area with drop clothes or an enclosed area or structure with containment to prevent the spread of lead dust, paint chips, or debris from lead-containing paint disturbance operations.
- H. PPE: Personal Protective Equipment.

1.05 ABBREVIATIONS

- A. ASTM: American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103
- B. CFR: Code of Federal Regulations, Government Printing Office, Washington, DC 20402
- C. DOT: Department of Transportation, Main Office, 50 Wolf Road, Albany, NY 12232
- D. NIOSH: National Institute for Occupational Safety and Health, Building J, N.E. Room 3007, Atlanta, Georgia 30333
- E. OSHA: Occupational Safety and Health Administration, 200 Constitution Avenue, Washington, DC 20210
- F. USEPA: United States Environmental Protection Agency, 401 M Street SW, Washington, DC 20460.

1.06 SUBMITTALS

- A. Quality Control Submittals:
 - 1. Worker' Qualifications: The persons removing lead containing/coated material and their Supervisors shall be personally experienced in this type of work and shall have been employed by a company with a minimum of one year experience in this type of work. Submit a copy of documentation of completion of current valid lead awareness certifications.
 - 2. Work Plan: Submit one copy of the work plan required under Quality Assurance Article.
 - 3. Waste Transporter Permit: One copy of transporter's current waste transporter permit.
- B. Operation and Maintenance Data: Submit air filtration unit operation and maintenance data and manufacturer's catalog sheets for the HEPA filter.
 - 1. Provide an affidavit stating that the HEPA filters to be used for this project are new and unused.

- C. Contract Closeout Submittals:
 - 1. Assessment Report compiled by a testing lab certifying that the work area has lead concentrations below the levels specified under the cleaning criteria.
 - 2. Disposal Site Receipts: Copy of waste shipment record and disposal site receipt showing that the lead-containing materials have been properly disposed.

1.07 QUALITY ASSURANCE

- A. Regulatory Requirements: Comply with the referenced standards.
- B. Pre-Work Conference: Before the Work of this Section is scheduled to commence, a conference will be held by the Director's Representative at the Site with the contractor and the lead handling subcontractor (if any) for the purpose of reviewing the Contract Documents, discussing requirements for the Work, and reviewing the Work procedures.
- C. Lead-Containing Material Removal Work Plan: Before the physical Work begins, prepare a detailed lead-containing material removal work plan.
 - 1. The work plan shall include, but not be limited to, the location, size, and details of lead dust control work areas, sequencing of lead containing material handling, work procedures, types of equipment, crew size, and emergency procedures for fire and medical emergencies.

1.08 PROJECT CONDITIONS

- A. Shut-down of Air Handling System: Complete the Work of this Section within the time limitation allowed for shutdown of the air handling system serving the work area.
 - 1. The air handling system will not be restarted until approval of the post-work dust-wipe testing following the last cleaning.
- B. Cover and seal all fin-tube radiator covers, diffusers, duplex outlets, speakers, smoke and heat detectors, etc.
 - 1. Prevent lead containing dust from entering hard to clean areas within the duct containment area.
 - 2. Items judged to be too difficult to protect may be disconnected, removed and replaced at contractor's option.
- C. Remove or encase all movable equipment in the work area with two layers of six mil fire retardant polyethylene sheeting.

1.09 HEALTH AND SAFETY

- A. Where in the performance of the work, workers, supervisory personnel or sub-contractors may encounter, disturb, or otherwise function in the immediate vicinity of contaminated items and materials, all personnel shall take appropriate continuous measures as necessary to protect all ancillary building occupants from the potential lead exposure.
 - 1. Such measures shall include the procedures and methods described herein and shall be in compliance with all applicable regulations of Federal, State and Local agencies.

1.10 FIRE PROTECTION, EMERGENCY EGRESS AND SECURITY

A. Establish emergency and fire exits from the lead dust control work area containment. Provide first aid kits and two full sets of protective clothing and respirators for use by qualified emergency personnel outside of the work area.

B. Provide a logbook throughout the entire term of the project. All persons who enter the regulated lead dust control work area or containment shall sign the logbook. Document any intrusion or incident in the log book.

1.11 PERSONAL PROTECTIVE CLOTHING AND EQUIPMENT

- A. Workers must wear protective suits, protective gloves, eye protection and a minimum of half-face respirator with HEPA filter cartridge for all projects. Respiratory protection shall be in accordance with OSHA regulation 29 CFR 1910.134 and ANSI Z88.2.
- B. Workers must be trained, have medical clearance and must have recently received pulmonary function test (PFT) and respirator fit tested by a trained professional.
 - 1. A personal air sampling program shall be in place as required by OSHA.
 - 2. The use of respirators must also follow a complete respiratory protection program as specified by OSHA.

PART 2 - PRODUCTS

2.01 RESPIRATORS

A. Type: Approved by the Mine Safety and Health Administration (MSHA), Department of Labor, or the National Institute for Occupational Safety and Health (NIOSH), Department of Health and Human Services.

2.02 VACUUM CLEANERS

A. Type: Vacuums equipped with HEPA filters.

2.03 PLASTIC SHEETS

- A. Type: Minimum 6 mil., clear, fire retardant polyethylene sheets.
- B. Floor Protective Layer: Minimum 10 mil., reinforced polyethylene sheets.

2.04 DISPOSAL BAGS

A. Type: Minimum 6 mil thick, clear polyethylene bags with preprinted Caution Label.

2.05 EQUIPMENT

- A. Temporary lighting, heating, hot water heating units, ground fault interrupters, and all other equipment on site shall be UL listed and shall be safe, proper, and sufficient for the purpose intended.
- B. All electrical equipment shall be in compliance with the National Electric Code, Article 305 Temporary Wiring.

PART 3 - EXECUTION

3.01 PRE-WORK TESTING

A. Testing: The Director's Representative will employ the services of an independent testing laboratory to perform the pre-work testing within the lead dust control work area and the areas adjacent to the lead dust control work area.

1. The testing lab will be New York State Department of Health, Environmental Laboratory Accreditation Program (NYS ELAP).

3.02 EMPLOYEE PROTECTION

A. Comply with all applicable Occupational Safety and Health Administration (OSHA) Requirements.

3.03 LEAD-CONTAINING/COATED MATERIAL HANDLING AND DISPOSAL

A. Handle and dispose of lead-containing materials in accordance with OSHA 1926.62 and the approved lead-containing material work plan. Use procedures and equipment required to limit occupational and environmental exposure to lead when material containing or coated with lead containing paint is handled and disposed of in accordance with referenced standards.

3.04 POST-WORK TESTING

- A. Testing: The Director will employ the services of an independent testing laboratory to perform the post-work testing within the lead dust control work area and the areas adjacent to the lead dust control work area.
 - 1. The testing lab will be New York State Department of Health, Environmental Laboratory Accreditation Program (NYS ELAP).

3.05 MULTIPLE WORK LOCATIONS

- A. The first two locations encountered shall be utilized to develop a method for an acceptable baseline approach for the lead dust control area, pre work wipe samples, employee protection, work method, post work wipe samples, cleaning criteria and disposal.
 - 1. Once an acceptable method is developed and verified by the independent testing lab employed by the Director, subsequent testing shall not be required.
 - 2. Do not change the methodology of the verified work plan during the course of the entire project.

3.06 CLEANING CRITERIA DWELLINGS & TARGET SPACES

- A. Cleaning criteria is separated into two categories; areas within the lead dust control work area, and areas adjacent to the lead dust control work area:
 - Surfaces within the Lead Dust Control Work Area: In each area where the lead containing/coated materials have been disturbed, compare the sample results with the criteria listed below. Any other surfaces inside the lead dust control work area that is not listed below shall be cleaned to the pre-work levels. If any of the results exceed the following values, clean again and schedule retesting until the lead dust levels are equal to or lower than the following values:
 - a. Floors: 10 micrograms of lead per square foot.
 - b. Window Sills: 100 micrograms of lead per square foot.
 - c. Window Troughs: 400 micrograms of lead per square foot.
 - d. Soil: 400 ppm in play areas and 1,200 ppm in bare soil in the remainder of the yard.
 - 2. Areas Adjacent to the Lead Dust Control Work Area: If the post-work test results indicate an increase in the lead level as compared to the pre-work samples, the area has been contaminated by the work and cleaning is mandatory.
 - a. Clean all affected surfaces and schedule retesting. If results still exceed pre-abatement levels, clean again and schedule retesting until the following criteria is met or until the lead dust levels are equal to or lower than the pre-work wipe sample results. Any affected surfaces that are not listed below shall be cleaned to pre-work levels.
 - 1) Floors: 10 micrograms of lead per square foot.

- 2) Window Sills: 100 micrograms of lead per square foot.
- 3) Window Troughs: 400 micrograms of lead per square foot.
- 4) Soil: 400 ppm in play areas and 1,200 ppm in bare soil in the remainder of the yard.

3.07 CERTIFICATION OF CLEANING IF NECESSARY

- A. Schedule dust wipe testing with the Director's Representative at the site, when work area is ready for clearance testing.
- B. Director's Representative will employ the services of an independent testing lab to perform clearance testing.
 - 1. Prior to removal of any isolation barrier, the Director's Representative will obtain a written affidavit and a final assessment report from the lab stating that the tests conform to all standards set forth by all authorities having jurisdiction, mentioned in the references.
 - 2. Schedule a walk-through inspection with the Director's Representative and obtain his written approval.
- C. The Director's Representative shall have final determination of an acceptable clearance level.

3.08 PRE-DISPOSAL TESTING

- A. Prior to disposal, test the removed materials for toxicity in accordance with EPA Method 1311, Toxicity Characteristic Leaching Procedure (TCLP).
 - 1. Test results indicating a value greater than 5 ppm lead classifies the removed material as Hazardous Waste.

3.09 DISPOSAL OF LEAD-CONTAINING/COATED MATERIAL AND RELATED DEBRIS

- A. Transport and dispose of lead-containing material classified as Hazardous Waste in accordance with the standards referenced in Part 1 of this Section.
- B. Transport and dispose of lead-containing material classified as Non- Hazardous Waste in accordance with the standards referenced in Part 1 of this Section.

3.10 RESTORATION

- A. Remove temporary decontamination facilities and restore area designated for these facilities to its original condition or better.
- B. Where existing construction is damaged or contaminated during the course of performing this project, restore area to its condition or better.

1.01 SECTION INCLUDES

- A. Furnish labor, materials, services, and equipment necessary for complete management, handling and disposal of the following PCB containing electrical equipment demolition related debris:
 - 1. PCB-containing transformers,
 - 2. PCB capacitors, rectifiers, insulators, switches, and other related equipment,
 - 3. PCB containing lighting ballasts.
- B. Perform PCB removal, handling and disposal work in accordance with all applicable federal, state and local regulations and the requirements specified herein. When applicable regulations, standards, protocols or requirements differ, the most stringent shall be followed.
- C. Contractor is to provide an itemized bid cost for all and each transformer removals per unit item, in their bid.
 - 1. The Owner shall receive a credit, If assumed/presumed PCB Dielectric and containated equipments are either found to be:
 - a. not existing, or
 - b. existing and tested/analyzed by 3rd party/owner as Non-Haz PCB (< 50ppm), or
 - c. If assumed PCB lighting ballasts read "NONPCB" then said items shall be disposed as E-Waste. Photographs shall be requested to confirm and saved in teh project file.

1.02 DEFINITIONS

- A. EPA refers to the United States Environmental Protection Agency.
- B. EPA identification number means the 12-digit number assigned to a facility by EPA upon notification of PCB waste activity under 40 CFR 761.205.
- C. Generator of PCB waste means any person whose act or process produces PCBs that are regulated for disposal or whose act first causes PCBs or PCB items to become subject to the disposal requirements or who has physical control over the PCBs when a decision is made that the use of the PCBs has been terminated and therefore is subject to the disposal requirements.
- D. Leak: Leak or leaking means any instance of a toxic substance present on any portion of the external surface of an item of equipment or container.
- E. Non-PCB Transformer means any transformer that contains dielectric fluid with a PCB concentration less than 50 ppm PCBs; except that any transformer that has been converted from a PCB Transformer or PCB-Contaminated Transformer cannot be classified as a non-PCB Transformer until reclassification has occurred in accordance with the requirements of 40 CFR 761.30(a)(2)(v).
- F. PCB Article means any manufactured article, other than a PCB Container, that contains PCBs and whose surface(s) has been in direct contact with PCBs. "PCB Article" includes capacitors, transformers, electric motors, pumps, pipes and any other manufactured item.
- G. PCB Capacitor means any capacitor that contains greater than or equal to 500 ppm PCB. Concentration assumptions applicable to capacitors is defined in 40 CFR 761.2.
- H. PCB Container means any package, can, bottle, bag, barrel, drum, tank, or other device used to contain PCB Articles or PCB Equipment, and whose surface(s) has not been in direct contact with PCBs.

- I. PCB Transformer means any transformer that contains greater than or equal to 500 ppm PCBs. PCB contaminated transformer means any transformer that contains PCBs at a concentration greater than or equal to 50 ppm but less than 500 ppm.
- J. PCB and PCBs means any chemical substance that is limited to the biphenyl molecule that has been chlorinated to varying degrees or any combination of substances which contains such substance. Refer to 40 CFR 761.1(b) for applicable concentrations of PCBs. PCB and PCBs as contained in PCB items are defined in 40 CFR 761.3.
- K. PCB-Contaminated Electrical Equipment means any electrical equipment including, but not limited to, transformers (including those used in railway locomotives and self-propelled cars), capacitors, circuit breakers, reclosers, voltage regulators, switches (including sectionalizers and motor starters), electromagnets, and cable, that contains PCBs at concentrations of greater than or equal to50 ppm and less than 500 ppm in the contaminating fluid. In the absence of liquids, electrical equipment is PCB-Contaminated if it has PCBs at greater than10 μg/100 cm2 and less than100 μg/100 cm2 as measured by a standard wipe test (as defined in 40 CFR 761.123) of a non-porous surface.
- L. PCB-Contaminated means a non-liquid material containing PCBs at concentrations greater than or equal to 50 ppm but less than 500 ppm; a liquid material containing PCBs at concentrations greater than or equal to 50 ppm but less than 500 ppm or where insufficient liquid material is available for analysis, a non-porous surface having a surface concentration greater than 10 µg/100 cm2 but less than100 µg/100 cm2, measured by a standard wipe test as defined in 40 CFR 761.
- M. PCBs: PCBs as used in this specification shall mean the same as PCBs, PCB Article, PCB Article Container, PCB Container, PCB Equipment, PCB Item, PCB Transformer, PCB-Contaminated Electrical Equipment, as defined in 40 CFR 761, Section 3, Definitions.
- N. Spill or Release means both intentional and unintentional spills, leaks, and other uncontrolled discharges where the release results in any quantity of PCBs running off or about to run off the external surface of the equipment or other PCB source, as well as the contamination resulting from those releases. This policy applies to spills of greater than or equal to 50 ppm PCBs. The concentration of PCBs spilled is determined by the PCB concentration in the material spilled as opposed to the concentration of PCBs in the material onto which the PCBs were spilled. Where a spill of untested mineral oil occurs, the oil is presumed to contain greater than or equal to 50 ppm, but less than 500 ppm PCBs and is subject to the relevant requirements of this policy.
- O. TSCA means the Toxic Substances Control Act (15 U.S.C. 2601 et seq.).

1.03 REFERENCE STANDARDS

- A. 29 CFR 1910.132-138 Personal Protective Equipment; current edition.
- B. 29 CFR 1910.145 Accident Prevention Signs and Tags; current edition.
- C. 40 CFR 761 Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution In Commerce, And Use Prohibitions; current edition.
- D. 49 CFR 178 Specifications for Packaging; current edition.
- E. 49 CFR Part 172 Hazardous Materials.
- F. 49 CFR Part 172 Transportation of Hazardous Materials.
- G. 6 NYCRR Part 370 374 NYS Hazardous Waste Regulations.

1.04 SUBMITTALS

- A. See Section 013300 SUBMITTALS, for submittal procedures, except that all submittals are to be made to Owner, not to Architect/Engineer.
- B. Waste Management Plan.
- C. Disposal Facility Qualifications and Permits.
- D. Proof of arrangements with, and acceptance by, waste disposal facilities.
- E. Contingency Plan including owner arrangements with emergency spill response contractor.
- F. Worker Training Certification: Submit certificates for proof of HAZWOPER training, with up-to-date annual refreshers, for all workers who will be handling PCBs or PCB contaminated materials.
- G. Notification of start of removal work.
- H. Spill notification and documentation: Any and all spillage of PCB liquid materials require owner notification and/or notification to NYS Spill Hotline 1-800-457-7362.
- I. Transporter and disposal documentation all shipment/transportation for disposal of PCB electrical equipment shall be accompanied by a hazardous waste manifest and a Land Disposal Restriction (LDR) form completed by a qualified environmental consultant.

1.05 QUALITY ASSURANCE

- A. Notification: Notify the Owner at least twenty (20) days prior to the start of toxic substance removal work.
- B. Reference Documents: At all times maintain one copy each of Contractor site specific Health & Safety Plan, Emergency Environmental Spill Contractor contact numbers (Contingency Plan), and Contractor work practices for removal, storage and disposal of toxic substances, at field office and one copy each in view at project site.
- C. Provide copies of Removal Contractor Qualifications, licenses, permits, insurances or other credentials, as appropriate.
- D. Professional Engineer licensed in the State of New York: Obtain services of a licensed P.E. for oversight and sign off on required plans and oversight of qualified individual for signing and management of shipping documentation.
- E. Training: Instruct employees on dangers of exposure to toxic substances present and on respirator use, decontamination, and applicable regulations. Such training shall include 40-hour HAZWOPER Training. In addition, workers may be required to have hazard awareness training, OSHA 30-hour contractor safety training and proof of training for signing manifest documentation.
- F. Surveillance Personnel: Surveillance personnel may enter Control Areas for brief periods of time provided they wear standard Level D worker PPE including gloves, hardhat, eye protection, and appropriate foot gear. Additional protective equipment may be required if respiratory hazard is involved or if skin contact with PCB is involved as determined by the Environmental Consultant.

- G. PCB Equipment and Substances: A Waste Management Work Plan shall be developed which shall include a detailed job-specific plan of the work procedures to be used in the removal and containment of PCB substance-containing materials, not to be combined with other hazardous abatement plans. The Plan shall:
 - 1. Identify Qualified personnel to sample, handle, manage and oversee all work in connection with PCB equipment management.
 - 2. Select removal procedures to minimize contamination of work areas with toxic substances or contaminated debris or waste.
 - 3. Include a sketch showing the location, size, and details, including PCB measured concentrations, of each transformer or PCB equipment including nameplate information for each piece of equipment.
 - 4. As necessary, provide a Pick Plan for lifting, staging, and loading for each transformer or PCB equipment.
 - 5. Include general safety requirements for eating, drinking, smoking and restroom procedures, interface of trades, sequencing of related work, PPE to be employed, protective equipment, and a detailed description of the method of containment of the operation to ensure that toxic substances are not spread or carried outside of the control area unless properly containerized or controlled.
 - 6. Include Contingency Plan provisions to be executed in the case of a spill or accident identifying qualified environmental response contractors, spill response equipment, notification procedures, and appropriate response actions.
 - 7. Identification of all disposal facilities to be employed and transportation methods to be employed.
 - 8. Obtain approval of plan by the owner prior to the start of removal work.
- H. PCB Transport and Disposal (per Waste Management Work Plan): Within fifteen (15) calendar days after award of contract submit a PCB Transport and Disposal Plan that complies with applicable requirements of federal, state, and local waste regulations.
 - 1. Do not proceed without Owner's approval of plan.
 - 2. Do not proceed without Architect/Engineer's approval of plan.
 - 3. Include in Plan:
 - a. Identification of all wastes associated with the work.
 - b. Generating facility EPA Waste ID number.
 - c. Estimated quantities of wastes to be generated and disposed of.
 - d. Names and qualifications of each contractor that will be transporting, storing, treating, and disposing of the wastes.
 - e. Disposal facility location and 24-hour point of contact; furnish two copies of facility's EPA waste permit applications and EPA Identification numbers.
 - f. Names and qualifications (experience and training) of personnel who will be working on-site with toxic substances.
 - g. List of waste handling equipment to be used in performing the work, to include cleaning, volume reduction, and transport equipment.
 - h. Spill prevention, containment, and cleanup contingency measures to be implemented.
 - i. Proof of waste acceptance by the disposal facility for each type of waste.

PART 2 PRODUCTS

2.01 EQUIPMENT

- A. Special Clothing (PPE): Work clothes shall consist of personal protective equipment (PPE) as required by 29 CFR 1910.132-138; including, but not limited to, the following:
 - 1. Disposable coveralls.
 - 2. Gloves (Disposable rubber/latex gloves may be worn under these).
 - 3. Disposable foot covers (polyethylene) as appropriate.

- 4. Eye protection such as chemical safety goggles.
- 5. Half mask cartridge respirator (as required)
- B. Special Clothing for Owner's Personnel Required to Enter Control Areas: Provide PPE same as specified for workers.

6 Pairs.

6 Pairs.

100 feet.

Minimum two bags.

(e.g., Sharpie pens).

capacity size.

5 rolls each.

(100 count).

as required

2 Each.

1 box, heavy duty 55 gallon

- C. PCB Spill Kit: Include the following items, in at least the quantity indicated:
 - Disposable Gloves (Polyethylene): 1.
 - Gloves With A High Degree Of Impermeability To PCB: 6 Pairs 2.
 - Disposable Coveralls With Permeation Resistance To PCB: 4 Each. 3. 2 Each
 - Chemical Safety Goggles: 4.
 - 5. Disposable Foot Covers (Polyethylene):
 - PCB Caution Sign: "PCB Spill--Authorized Personnel Only": 2 Each. 6.
 - 7. Banner Guard Or Equivalent Banner Material:
 - Absorbent Material (aka speedy dry): 8.
 - Waste Bags: 9.
 - 10. Duct Tape:
 - 11. Drum wrenches.
 - 12. Package of absorbent pads
 - 13. Broom and shovel.
 - 14. Permanent markers
 - 15. PCB and Hazardous Waste Drum Labels.
 - 16. Waste Containers: 55 gallon open top drums:
- D. Labels:
 - Yellow PCB Labels that Comply with 40 CFR 761, Subpart C. 1.
 - Hazardous Waste Labels (Yellow with red lettering). 2.
 - Non-Hazardous Waste Labels (white with green lettering). 3.
 - 4. Labeling
 - a. Affix labels to PCB waste containers and PCB-contaminated items.
 - b. Affix drum labels to upper 1/3rd of 55-gallon drums.
 - All labels are typically 4-inch square, with sufficient print size to be clearly legible, with C. bold print on contrasting background.
 - d. Print all required information clearly with a "Sharpie" or other permanent marking pen.
- E. Caution Signs: (Comply with 29 CFR 1910.145).
 - Provide signs at approaches to Control Areas. 1.
 - Locate signs at such a distance that personnel may read the sign and take the necessary 2. precautions before entering the control area.
- F. Storage Containers for PCBs: (Comply with 40 CFR 761).
 - 1. Liquid PCBs: Department of Transportation (DOT) Specification 17E containers.
 - Non-Liquid PCB Mixtures, Articles, and Equipment: DOT Specification 17C containers 2. with removable heads.

PART 3 EXECUTION

- 3.01 PREPARATION
 - A. Control Area: Isolate Control Area as necessary by physical boundaries to prevent unauthorized entry of personnel: do not permit food, drink, or smoking materials in areas where toxic substances are handled or stored and identify all PCB transformer and equipment locations and determine who is equipment owner.

- B. Document equipment nameplate information, photograph units and note if any PCB or Non-PCB stickers have been affixed to equipment.
- C. Confirm that all transformers or electrical equipment have been de-energized, isolated, and grounded.
- D. Inspect all areas around unit for leaks, former spill staining, general unit condition, accessibility, surrounding dangers or impediments.
- E. Unless previously documented, obtain a sample of the dielectric oil in each transformer or piece of equipment for laboratory analysis by a NYS ELAP certified laboratory. If sample cannot be obtained then the transformer or piece of equipment must be considered PCB. Ensure that any and all sample access ports, valves or other locations are resealed and secure.
- F. Obtain a wipe sample of the transformer/equipment pad, enclosure, or surrounding base in accordance with 40 CFR 761.123.

3.02 WORK PROCEDURE - PCBS

- A. OSHA Permissible Exposure Limits (PEL) for PCBs is dependent on the percent PCB Aroclor used in the dielectric oil. For Aroclor 1242, PEL is TWA 1.0 mg/m3. For Arochlor 1254, PEL is TWA 0.5 mg/m3. Avoid direct skin contact.
- B. Work Operations general: Ensure that work operations and processes involving PCB or PCB-contaminated materials are conducted in accordance with 40 CFR 761 and the applicable NYS hazardous waste requirements of this section, including but not limited to:
 - 1. Obtain advance approval from owner of PCB Equipment of all Plans and work to be conducted.
 - 2. Determine if a Process Safety Analysis and/or Job Safety Analysis needs to be performed.
 - 3. Obtain advance approval of PCB storage and staging locations, planned access and equipment and vehicle parking.
 - 4. Notify Owner prior to commencing the operation.
 - 5. Report leaks and spills to Owner and NYS Spill Hotline.
 - 6. Implement Contingency Plan for cleaning up spills.
 - 7. Maintain access log of employees working in Control Area and providing copy to Owner upon completion of the operation.
 - 8. Inspect PCB and PCB-contaminated items and waste containers for leaks, suitable containment, proper labeling and signage, and forward copies of inspection reports to Owner.
 - 9. Maintain the specified spill kit at an appropriate location.
 - 10. Maintain inspection, inventory and spill records.
 - 11. Maintain onsite the Site-Specific Health & Safety Plan
 - 12. Maintain copies of all shipping papers, manifests, BOLs, etc.
- C. Ensure all equipment identified for removal has be thoroughly de-energized, grounded, and isolated.
- D. Laboratory Analysis: All transformer or equipment oils shall be sampled and analyzed by a NYS certified (ELAP) laboratory. If the transformer is hermetically sealed using solder or fusion, with no access ports or openings then it must be assumed to be PCB unless other information or nameplate indicates otherwise. If the name plate states that the transformer contains Pyranol, Interteen, Aroclor, it is assumed to be PCB-containing equipment.
- E. As appropriate for PCB concentrations in equipment to be removed, access and pump out all possible dielectric oil, place into appropriate containers for ultimate transport and disposal at an

approved facility by a licensed PCB hauling contractor. Have all contingency plans and support in-place.

- F. Perform PCB equipment removal as described in Waste Management Work Plan (including implementation of Pick Plan); handle PCBs so that no spills or skin contact occurs.
- G. Personnel Protection: Require workers to wear and use PPE, as specified in the site-specific Health & Safety Plan and Job Safety Analysis.
- H. Hazards:
 - 1. Do not expose PCBs to open flames or other high temperature sources since toxic decomposition by-products may be produced.
 - 2. Do not heat or handle PCBs to temperatures of 135 degrees F or higher without Owner's concurrence.
 - 3. If any cutting or welding is involved, obtain Hot Work permit
- I. Package, mark, transport, and dispose of PCBs as required by regulations. Completion of a Hazardous Waste Manifest by a qualified person is required for all PCB items shipped off-site.
- J. Control Area: Allow only personnel certified as having received specified training into the control area.
- K. No Smoking: Smoking is not permitted within 50 feet of control area; provide "No Smoking" signs as directed by Owner.
- L. Confined Spaces: Wherever feasible, do not carry out PCB handling operations in confined spaces having limited means of egress and inadequate cross ventilation. If used, discharge exhaust ventilation for PCB operations to outside and away from personnel.
- M. Drip Pans: Place drip pans under PCB transformers and equipment when staged or stored for removal; provide pans with containment volume of at least one and one-half times internal volume of PCBs that would drain into pan.
- N. Evacuation Procedures: Establish written procedures for evacuation of injured workers; do not delay aid for a seriously injured worker for reasons of decontamination.

3.03 PCB-CONTAINING EQUIPMENT EXCEPT BALLASTS

- A. Removal of Liquid PCB:
 - 1. Pump equipment items of free-flowing liquid prior to transportation.
 - 2. Place the drained liquids in specified containers or directly into transport vehicles.
 - 3. All drained equipment must be transported inside suitable containment trays.
 - 4. Do not mix different non-hazardous PCB liquids with hazardous concentrations in the same container.
 - 5. Containers must have a minimum of 2 inch ullage space from the top of the container.
 - 6. After draining use absorbent rags or material to absorb any dripped or spilled residue remaining at the removal point.
- B. If equipment cannot be drained or pumped empty, place it in storage or overpack container of the type specified. Assumed such equipment is PCB contaminated.
- C. Labeling:
 - 1. Apply specified PCB Labels to containers and drained PCB-contaminated electrical equipment.
 - 2. Apply Hazardous Waste Labels to drums of contaminated materials. Apply date drained to transformer using stencil or grease pencil.

3.04 BALLASTS

- A. As ballasts are removed from lighting fixtures, inspect label on ballast.
 - 1. Ballasts Without " PCB" Label: Assume to contain PCBs; containerize in drums and dispose of as PCB article.
 - 2. Ballasts that do not have a "No PCB" Label" or there is no indication on nameplate, the following applies:
 - a. If manufactured through 1979 and not labeled "No PCBs" assume it contains PCBs.
 - b. If manufactured through 1979 and labeled "No PCBs" assume it is non-PCB.
 - c. If manufactured after 1979 and through 1989, it should be labeled "No PCBs" and may be assumed to be non-PCB.
 - d. If manufactured after 1989 it should be non-PCB but may not be labeled "No PCBs".
 - e. If manufactured after 1979 through 1991 it may contain DEHP but can be disposed of as a non-hazardous waste.

3.05 PCB SPILL CLEANUP REQUIREMENTS

- A. Immediately report to Owner all PCB spills on the ground or into the water. PCB spills contained in drip pans, and PCB leaks into drip pans should immediately be addressed. The NYS DEC Spill Hotline must also be notified if a spill occurs.
- B. Implement Contingency Plan and notify emergency spill response contractor if spill or leak occurs.
- C. Control Area: Rope off area around edges of PCB leaks and spills and post "PCB Spill Authorized Personnel Only" caution sign. Immediately transfer leaking items to drip pan or other container if possible. Otherwise construct a dike or berms of speedy dry or equivalent around leak area; protect any floor drains or other means of conveyance.
- D. Cleanup: Comply with 440 CFR 761, Subpart G and applicable hazardous regulations.
 - 1. Initiate cleanup of spills as soon as possible, but no later than 24 hours of its discovery.
 - 2. Cleanup should be performed only by qualified and trained personnel.
 - 3. Require response personnel to wear specified PPE, unless determined otherwise by a CIH or the Safety Manager.
 - 4. If misting, elevated temperatures, or open flames are present, or if spill is situated in a confined space, evacuate and notify Owner.
 - 5. Clean up liquid with absorbent rags, pads or other conventional absorbent medium.
 - 6. Treat spent absorbent as solid PCB remediation waste.
- E. Records and Certification: Document cleanup with records of decontamination in accordance with 40 CFR 761, Section 125, Requirements for PCB Spill Cleanup; provide certification of decontamination. Collect all associated paperwork associated with removal and disposal.
- F. Sampling: Perform post cleanup sampling as required by 40 CFR 761, Section 130, Sampling Requirements.
- G. Do not remove boundaries of PCB control area until site is determined satisfactorily clean by Owner.
- 3.06 TEMPORARY STORAGE PRIOR TO DISPOSAL
 - A. Storage Site: Obtain Owner's approval in advance of areas, spaces, rooms, and buildings used to store or stage toxic substances prior to transport for disposal off-site; storage sites must comply with the following criteria without exception:
 - 1. Adequate roof and walls to prevent rainwater from reaching stored toxic substances.

- 2. Adequate floor that has continuous curbing with minimum 6 inch high curb, with containment volume equal to at least two times internal volume of largest toxic substance article or container stored therein or 25 percent of total internal volume of all toxic substance containing equipment or containers stored therein, whichever is greater.
- 3. No drain valves, floor drains, expansion joints, sewer lines, or other openings that would permit liquids to flow from curbed area.
- 4. Floors and curbing constructed of continuous smooth and impervious materials, such as Portland cement, concrete, or steel, to prevent or minimize penetrations of toxic substances.
- 5. Not located at a site that is below the 100-year flood water elevation.
- 6. Posted with specified Caution Sign.
- B. Store PCBs, PCB articles, and PCB-contaminated items in specified containers.
 - 1. Label waste containers with the following as appropriate:
 - a. Specified Hazardous Waste Label
 - b. Specified PCB Label.
 - c. Date item was placed in storage and name of generator.
 - 2. Label PCB articles and PCB-contaminated items with the following:
 - a. Specified PCB label.
 - b. Date item was placed in storage and name of generator.

3.07 CLEANING

- A. Implement clean up by a qualified environmental contractor and containerize wastes daily.
- B. Maintain surfaces of Control Areas free of accumulations of toxic substances. Restrict spread of dust and debris; keep waste from being distributed over work area.
- C. Do not remove Control Area boundaries or warning signs prior to Owner's approval.
- D. Reclean areas showing residual toxic substances.

3.08 DISPOSAL BY CONTRACTOR

- A. Comply with disposal requirements and procedures specified in 40 CFR 761 and NYS Hazardous Waste Regulations:
 - 1. Ensure delivery of all toxic substances and waste to a disposal facility having required permits and licenses.
 - 2. Ensure that all transportation of wastes is performed with trucks having appropriate transport permits, including Part 364 permit for NY.
 - 3. Do not accept toxic substance waste unless it is accompanied by a manifest signed by Owner or owner's authorized representative. Specialized training is required for completion of a hazardous waste manifest.
 - 4. Before transporting toxic substance waste, sign and date manifest acknowledging acceptance of the waste from Owner.
 - 5. Distribute copies of the manifest as required by regulation, i.e., 6NYCRR Part 371.
 - 6. Ensure that manifest accompanies waste at all times and that transport vehicles are properly placarded.
- B. Payment will not be made until Certificate of Disposal has been furnished to Owner.
- C. Certificate of Disposal: Submit to Owner within thirty (30) days of date that disposal of waste identified on manifest was completed; include on the certificate:
 - 1. The identity of disposal facility, by name, address, and EPA identification number.
 - 2. The identity of waste affected by Certificate of Disposal including reference to manifest number for the shipment.

- 3. Statement certifying the fact of disposal of the identified waste, including date(s) of disposal, and identifying disposal process used. Certification as defined in 40 CFR 761, Section 3.
- 4.

END OF SECTION

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

- A. This specification covers the identification and disposal of hazardous waste, and related hazardous materials. Products shall be as follows or as directed by the Owner and or their representative. Installation procedures shall be in accordance with the product manufacturer's recommendations. Demolition and removal of materials shall be as required to support the work.
- B. Special Wastes:
 - 1. Asbestos-Containing Materials (ACM): ACM is regulated by EPA TSCA Rules, NY Code Rule 56 and OSHA standards, and is not Hazardous Waste.
 - PCB Bulk Waste and non-liquid PCB materials (NLPCB): Window caulk and other caulk may contain NLPCB; if so, when disposed these materials are EPA-regulated PCB Bulk Waste under TSCA, and are NYS hazardous waste. PCB light ballasts are also to be disposed of as NYS Hazardous Waste. See Section 028400 for work involving PCB Containing Materials.
- C. Scope of Work: Please see H-100 Drawings For Tables and Summary

1.02 DEFINITIONS

- A. Hazardous waste shall be any materials to be disposed that possess at least one of four characteristics, ignitibility, corrosivity, reactivity or toxicity, as defined and regulated by the Resource Conservation and Recovery Act (RCRA) and applicable state and federal regulations, or a material specifically identified as hazardous waste by applicable Federal or State lists, in 40 CFR 261 or 6 NYCRR 371.
- B. A Conditionally Exempt Small Quantity Generator (CESQG) of hazardous waste shall be a waste handler who generates no more than 100 kilograms per month of listed and/or characteristic hazardous waste, generates no more than 1 kilogram of acute hazardous waste in any calendar month, and stores no more than 1000 kilograms of listed and/or characteristic hazardous waste or more than 1 kilogram of acutely hazardous waste.
- C. A Small Quantity Generator (SQG) of hazardous waste shall be a waste handler who generates no more than 1000 kilograms per month of listed and/or characteristic hazardous waste, generates no more than 1 kilogram of acute hazardous waste per month, and stores no more than 6000 kilograms of listed and/or characteristic hazardous waste or more than 1 kilogram of acutely hazardous waste.
- D. Large Quantity Generator (LQG) of hazardous waste shall be a waste handler who generates more than 1000 kilograms per month of listed and/or characteristic hazardous waste, generates more than 1 kilogram of acute hazardous waste per month, or stores more than 6000 kilograms of hazardous waste or 1 kilogram of acutely hazardous waste.
- E. The Owner's Consultant: The Owner shall provide a third-party consultant to provide pre-work assessments, project monitoring assessments for the construction procedures for the work area and surrounding areas and final clearance assessments. The Contractor shall be responsible for the worker protection requirements.

1.03 SUBMITTALS

- A. Before start of work: At the pre-construction meeting, the Contractor shall submit the following to the Owner's Representative for review:
 - 1. Copy of State or local license for hazardous waste hauler.

- 2. Certificate of at least one on-site supervisor which has satisfactorily completed the OSHA 40 hour Health and Safety course for handling hazardous waste and spills.*
- 3. Certificates of workers, which have successfully completed the OSHA 40-Hour Health and Safety Course for Hazardous Waste and spills.*
- 4. List of the employees scheduled to perform this work.
- 5. Schedule of start and finish times and dates for this work.
- 6. The name, address and EPA ID No. of the disposal facility where these waste materials are to be received. Include contact person, a copy of the facility permit and telephone number.
- 7. The facility permit must identify the waste material(s) to be received, and must be accompanied by a statement that the facility has the capacity and authority to accept the waste. Land Disposal Restriction (LDR) forms must also be provided.
- 8. Material Safety Data Sheet (MSDS) for all materials to be removed.
- 9. If the Contractor introduces any chemical into the work environment, a MSDS for that chemical must be presented to the Owner's Representative prior to use.
- 10. Transporter must have notified the EPA and/or other appropriate local government agency in advance of its intentions to transport hazardous materials and, if applicable, receive an identification number. The transporter shall submit a copy of the NYS DEC Part 364 Permit, for review.
- 11. Health and Safety/Contingency Plan for material handling and emergency procedures.
- 12. Certification for medical examinations.
- 13. Respiratory protection program.
- 14. Project Plan: Provide a description of the methods, procedures and materials to be used in performing the work and handling all hazardous wastes. Also provide a schedule identifying specific work areas and duration. The schedules will be utilized to schedule facility and third party consultant requirements.
- 15. Waste Sampling Plan: Provide a sampling plan that describes all samples to be taken and the parameters to be analyzed, as well as the laboratory providing the services; or provide another basis for identification of the waste, such as an MSDS.
- B. Do not start work until submittals are returned with the Owner's Representative stamp indicating that the submittal is returned for unrestricted use.

1.04 REGULATORY REQUIREMENTS

- A. All activities related to the work shall be conducted in compliance with all applicable laws, regulations, and requirements which may include, but not be limited to, the United States Environmental Protection Agency (US EPA), United States Department of Transportation (US DOT), Resource Conservation and Recovery Act (RCRA), Toxic Substances Control Act (TSCA), Occupational Safety and Health Administration (OSHA), New York State Department of Environmental Conservation (NYS DEC), and Local AHJ.
- B. The Contractor is required to secure and maintain all required regulatory permits necessary to perform all aspects of the work.
- C. The Contractor shall containerize and store waste in accordance with all applicable regulations. All containers are to be appropriately marked/labeled.

PART 2 PRODUCTS

2.01 MATERIALS

A. Drums: Recovery or salvage drums acceptable for disposal of hazardous waste. Prior approval of drums is required. Drums or containers must meet the required OSHA, EPA (40 CFR Parts 260-264 and 300), and DOT Regulations (49 CFR Parts 171-178). Use of damaged containers shall not be allowed.

- B. Labels: As required by the EPA and OSHA for handling, transportation, and disposal of hazardous waste.
- C. Absorbent Material: Clay, soil or any commercially available absorbent used for the purpose of absorbing hazardous or potentially hazardous materials.

PART 3 EXECUTION

3.01 EXECUTION

- A. All waste shall be stored, handled, transported and disposed of in accordance with all federal, state and local guidelines and regulations. The Contractor is to obtain all permits, licenses, etc., which are necessary for the storing, transporting and disposing of hazardous waste. The Contractor shall develop all applicable manifests, Profile Sheets, Land Ban Forms and any other documentation and co-ordinate with the Owner regarding proper signatures. The Contractor may be required to notify the EPA of the hazardous waste activities, and obtain an EPA identification number specifically for the project, if one is not available.
- B. The Contractor shall identify and classify the hazardous waste generated through the performance of the work as per the governing regulations, and in accordance with the Waste Sampling Plan submittal from Section 1.1 above. The Contractor shall conduct the required sampling and chemical analysis for handling, storing, transporting and disposing of the hazardous waste.
- C. The Contractor is responsible for securing appropriate treatment or disposal for the waste streams at a permitted TSDF, in compliance with all requirements, and for obtaining a copy of the waste manifest as executed by the TSDF. If the manifest is not returned within the required time, the contractor shall notify the Owner and the NYS DEC, and initiate an investigation as required.
- D. Transporters shall maintain waste manifest and shipment record forms. All transporters are required to obtain and maintain NYS DEC Part 364 Waste Transporter permit and, if applicable, a NYC Fire Department permit for transporting flammables. The Part 364 Permit shall have the license plate number of the vehicle, the expiration date of the permit, the type of waste the hauler can take and the treatment, storage and disposal (TSD) facility to which the hauler can take the waste. The transporter must also have all applicable, current waste transportation permits for states where proposed disposal facility is located.
- E. The Contractor shall supply all required placard and labeling, and shall have an appropriately trained individual to prepare and sign the hazardous waste manifest, as the DOT shipper.
- F. The Contractor shall furnish all certified copies of manifests (interim storage and final disposal) within regulatory requirements. Within 30 days from the acceptance of the waste by the disposal facility, the Contractor shall provide the Owner with Certificate of Disposal documents, as a requirement for final payment.
- G. Unless directed otherwise, the Contractor shall file the annual report and fee report if applicable for the hazardous waste shipped, and provide closure notification to EPA and DEC immediately upon completion of the work.

*HAZWOPER Training is not required if the waste is PCB Bulk waste alone, but OSHA HAZCOM and TSCA training are still required

END OF SECTION

PART 1 GENERAL

1.01 DESCRIPTION OF WORK

- A. This specification covers the removal and disposal of Universal waste, including fluorescent lamps, high-intensity discharge (HID) lamps, mercury thermostats and switches, batteries and pesticides (not PCB lighting ballasts). Removed or replaced mercury thermostats shall be recycled as per current NYS DEC regulations, instead of disposal as Universal Waste. Demolition and removal of materials shall be as required to support the work.
- B. Scope: Please refer to Environmental & Hazardous Materials Assessment Report by H2M architects + engineers, at Building 275 dated November 21, 2024

1.02 SUBMITTALS

- A. Before Start of Work: Submit the following to the Owner's Representative for review. Do not start work until these submittals are returned with Owner's Representative's approval.
 - 1. Copy of State or local license for hazardous waste hauler;
 - 2. Certification of at least one on-site supervisor which has satisfactorily completed the OSHA 40 Hour Health and Safety Course for Handling Hazardous Materials;
 - 3. Certificates of workers which have successfully completed at least the OSHA 40-Hour Health and Safety Course for Hazardous Materials;
 - 4. Certificates of workers which have successfully completed the required employee training for universal waste or appropriate type of training to the type of wastes being managed;
 - 5. Schedule of start and finish times and dates for this work;
 - 6. Name and address of the universal waste handler or a destination facility where the waste materials is to be treated, deposited or recycled in accordance with all regulatory requirements (include contact person and telephone numbers), if the universal waste meets the definition of hazardous waste, the name and address of the hazardous waste treatment, storage and disposal (TSD) facility, the name and address of the mercury thermostat recycling collection site;
 - 7. Material Safety Data Sheets for all materials requiring removal;
 - 8. If Contractor introduces any chemical into the work environmental, a MSDS for that chemical is required before use;
 - 9. Contingency Plan for handling emergency spills or leaks;
 - 10. Provide a copy of the NYS DEC Part 364 Waste Transporter permit for Universal Waste Transporters that transport more than 500 pounds of universal waste in a single shipment since they must be a permitted waste transporter;
 - 11. Large Quantity Handlers of universal waste must provide documentation of notification to the EPA and/or the appropriate local government agency in advance of its intentions to transport the waste and receive from the facility or provide an EPA identification number prior to exceeding 5,000 kilograms of waste on-site;
 - 12. Provide a record of all universal waste shipments received and sent offsite from the project.

1.03 DEFINITIONS

A. Large Quantity Handler (LQH) of Universal Waste shall be a waste handler who accumulates 5,000 kilograms or more of universal waste (batteries, pesticides, thermostats, or lamps, calculated collectively) at any time. This designation as a large quantity handler of universal waste is retained through the end of the calendar year in which 5,000 kilograms (11,000 pounds) or more total of universal waste is accumulated. The LQH shall notify the EPA, acquire or co-ordinate with a facility regarding an EPA identification number, and provide records for each shipment. The LQH shall ensure all employees are thoroughly familiar with proper waste handling and emergency procedures, relative to their responsibilities during normal facility operations and emergencies.

- B. Small Quantity Handler of Universal Waste (SQH) shall be a waste handler who does not accumulate 5,000 kilograms (11,000 pounds) or more of total universal waste (batteries, pesticides, thermostats, or lamps, calculated collectively) at any time.
- C. Destination Facility shall be a facility that legitimately and can legally accept universal waste from offsite so that the universal waste can be treated, disposed, or recycled in accordance with the regulatory requirements.
- D. Universal Waste Transporter shall be anyone who transports universal waste. In New York, universal waste transporters that transport greater than 500 pounds of universal waste in a single shipment must be a permitted hazardous waste transporter pursuant to Federal and State regulations. Proper notification with the receiving handler agreeing to receive the shipment is required by the Universal Waste Transporter.
- E. Universal Waste consists of the following discarded materials, as identified in 6 NYCRR 374-3: Fluorescent light bulbs high-intensity discharge (HID) lamps, mercury thermostats and switches, batteries, and pesticides. Removed or replaced mercury thermostats must be delivered to a designated mercury thermostat collection site as per current NYC DEC regulations. Disposal of mercury thermostats in a solid waste management facility is prohibited. PCB ballasts/capacitors from light fixtures shall not be treated as universal waste, they shall be handled and disposed of as hazardous waste. See the Hazardous Waste Disposal Specification for these wastes.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Polyethylene Sheet: A single polyethylene film in the largest sheet size possible to minimize seams, 6.0 mil thick, clear, frosted, or black.
- B. Duct Tape: Provide duct tape in 3" widths, witty an adhesive which is formulated to stick aggressively to sheet polyethylene.
- C. Spray Cement: Provide spray adhesive in aerosol cans which is specifically formulated to stick tenaciously to sheet polyethylene.
- D. Disposal Bags: Provide 6 mil thick leak-tight polyethylene bags.
- E. Labels: As required by the EPA and OSHA for handling, transportation, and disposal of hazardous waste.
- F. Drums: Recovery or salvage drums acceptable for disposal of hazardous waste. Prior approval of drums is required. Drums or containers must meet the required OSHA EPA (40 CFR Parts 264-265 and 300), and DOT regulations (49 CFR Parts 171-178). Use of damaged drums will not be allowed.

PART 3 EXECUTION

3.01 UNIVERSAL WASTE

- A. Employee training shall ensure that all employees are thoroughly familiar with proper waste handling and emergency procedures, relative to their responsibilities during normal operations and emergencies and to the type of waste they are handling.
- B. Mercury thermostats shall be segregated from other Universal Wastes to allow for required recycling.

- C. Once the properly labeled containers holding the universal waste have been filled and sealed, they shall be stored in designated accumulation areas as agreed upon by the Owners Representative and Contractor. They shall not be allowed to store in transportation vehicles, or onsite for more than one year from when the waste has been generated.
- D. Documentation when a universal waste in storage was first accumulated shall be provided. This is to be done by dating and labeling the waste with the date of the earliest accumulation that can document the length of time the universal waste has been accumulated.
- E. Maintenance of an inventory system on-site that identifies the earliest date that any universal waste in a group of universal waste items or a group of containers of universal waste became a waste was received.
- F. Any waste developed from the work that exhibits one or more characteristics of hazardous waste, that are not specifically identified by EPA and DEC as Universal Waste, must be handled accordingly and not as a universal waste. See the Hazardous Waste Disposal Specification for those wastes.
- 3.02 OFF-SITE SHIPMENT OF UNIVERSAL WASTE
 - A. Off-Site shipments shall meet the requirements for offsite shipments and is prohibited from sending or taking universal waste to a place other than a designated universal waste handler or a universal waste destination facility.
 - B. LQH's of universal waste must notify EPA in writing and develop an EPA identification number or co-ordinate with the facility regarding use of their EPA identification number, prior to exceeding 5,000 kilograms of universal waste onsite.
 - C. SQH's do not need to notify EPA, receive an EPA identification number or keep records of shipments of universal waste.
 - D. LQH's must keep a record of all universal waste shipments received or sent offsite, and must retain those records for at least three years from the date of receipt or shipment. Records may include invoices, manifests, logs, bills or lading, or other shipping documents.
 - E. The Contractor shall provide certified copies of all receipts obtained from designated mercury thermostat recycling collection sites within 30 days of thermostat acceptance by collection site.
 - F. The Contractor shall furnish all certified copies of manifests (interim storage and final disposal) within regulatory requirements. Within 30 days from acceptance of the waste by the disposal facility, the Contractor shall provide the Owner with Certificate of Disposal documents, as a requirement for final payment.

END OF SECTION

PART 1 - GENERAL

1.01 SUMMARY

- A. Section includes cast-in-place concrete, including formwork, reinforcement, concrete materials, mixture design, placement procedures, and finishes, for the following:
 - 1. Suspended slabs.
 - 2. Concrete toppings.

1.02 REFERENCES

- ACI 117 Specifications for Tolerances for Concrete Construction and Materials; 2010 (Reapproved 2015).
- B. ACI 211.1 Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete; 1991 (Reapproved 2009).
- C. ACI 301 Specifications for Structural Concrete; 2016.
- D. ACI 302.1R Guide to Concrete Floor and Slab Construction; 2015.
- E. ACI 304R Guide for Measuring, Mixing, Transporting, and Placing Concrete; 2000 (Reapproved 2009).
- F. ACI 305R Guide to Hot Weather Concreting; 2010.
- G. ACI 306R Guide to Cold Weather Concreting; 2016.
- H. ACI 308R Guide to External Curing of Concrete; 2016.
- I. ACI 318 Building Code Requirements for Structural Concrete and Commentary; 2014 (Errata 2018).
- J. ACI 347R Guide to Formwork for Concrete; 2014, with Errata (2017).
- K. ASTM A615/A615M Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement; 2018.
- L. ASTM C1059/C1059M Standard Specification for Latex Agents for Bonding Fresh to Hardened Concrete; 2013.
- M. ASTM C1116/C1116M Standard Specification for Fiber-Reinforced Concrete; 2010a (Reapproved 2015).
- N. ASTM C1240 Standard Specification for Silica Fume Used in Cementitious Mixtures; 2015.
- O. ASTM C150/C150M Standard Specification for Portland Cement; 2018.
- P. ASTM C171 Standard Specification for Sheet Materials for Curing Concrete; 2016.
- Q. ASTM C172/C172M Standard Practice for Sampling Freshly Mixed Concrete; 2017.
- R. ASTM C173/C173M Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method; 2016.
- S. ASTM C192/C192M Standard Practice for Making and Curing Concrete Test Specimens in the Laboratory; 2019.

- T. ASTM C260/C260M Standard Specification for Air-Entraining Admixtures for Concrete; 2010a (Reapproved 2016).
- U. ASTM C309 Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete; 2019.
- V. ASTM C31/C31M Standard Practice for Making and Curing Concrete Test Specimens in the Field; 2019a.
- W. ASTM C33/C33M Standard Specification for Concrete Aggregates; 2018.
- X. ASTM C330/C330M Standard Specification for Lightweight Aggregates for Structural Concrete; 2017a.
- Y. ASTM C39/C39M Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens; 2018.
- Z. ASTM C494/C494M Standard Specification for Chemical Admixtures for Concrete; 2017.
- AA. ASTM C618 Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete; 2019.
- AB. ASTM C94/C94M Standard Specification for Ready-Mixed Concrete; 2019a.
- AC. ASTM C989/C989M Standard Specification for Slag Cement for Use in Concrete and Mortars; 2018a.
- AD. ASTM D1751 Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types); 2018.
- AE. ASTM D2103 Standard Specification for Polyethylene Film and Sheeting; 2015.
- AF. ASTM E1155 Standard Test Method for Determining F(F) Floor Flatness and F(L) Floor Levelness Numbers; 2014.
- AG. AWS D1.4/D1.4M Structural Welding Code Reinforcing Steel; 2018.
- AH. PS 1 Structural Plywood; 2009.
- Al. ACI 350 Concrete Sanitary Engineering Structures.
- AJ. ANSI/ASTM A185 Welded Steel Wire Fabric for Concrete Reinforcement.

1.03 ACTION SUBMITTALS

- A. The contractor shall comply with the requirements of Division 01 Specification of the Project Manual, Section 013300 SUBMITTALS.
- B. Product Data: For each type of product indicated.
- C. Design Mixtures: For each concrete mixture. Submit alternate design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.
 - 1. Indicate amounts of mixing water to be withheld for later addition at Project site.
 - 2. Submit mix design mixtures for each type of concrete to be used on the Project at least 30 calendar days prior to the first scheduled concrete pour. The Contractor's testing

laboratory shall develop concrete mix designs and test all materials and mixes for conformance with ACI 301 and these specifications. The costs associated with development of the design mix and testing of samples shall be included in the bid price.

- 3. Submit the following:
 - a. Name, address, and telephone number of Contractor's laboratory.
 - b. Mix proportions.
 - c. Source of cement, type, brand, and certified copies of mill reports, including physical and chemical analysis.
 - d. Sources of fine aggregates and results of test made in accordance with ASTM C33/C33M and ASTM C40.
 - e. Source of coarse aggregates and results of tests made in accordance with ASTM C33/C33M.
 - f. Catalog cuts of all admixtures.
 - g. Furnish test results of slump, air entrainment and water-cement ratio for each mix design.
- 4. For each mix proposed, make and cure four (4) standard 6 inch concrete test specimens to the laboratory in accordance with ASTM C192/C192M. Furnish compression test results made in accordance with ASTM C39/C39M. Break two (2) cylinders at seven (7) days and two (2) at 28 days.
- 5. If the concrete is intended to be pumped, design mix accordingly and submit certification that it has been tested for pumping.
- 6. If adopted mix fails to produce concrete meeting the requirements for strength and placibility, the Architect may order additional cement or adjustments to mix proportions at no extra cost to the Owner.
- D. Steel Reinforcement Shop Drawings: Placing drawings that detail fabrication, bending, and placement. Include bar sizes, lengths, spacing, locations, material, grade, bar schedules, stirrup spacing, bent bar diagrams, bar arrangement, splices and laps, mechanical connections, tie spacing, hoop spacing, and supports for concrete reinforcement including steel bars and wire fabric.
- E. Construction Joint Layout: Indicate proposed construction joints required to construct the structure.
 - 1. Location of construction joints is subject to approval of the Architect, if not shown on the drawings.
- F. Samples: For waterstops and vapor retarder.

1.04 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer and testing agency.
- B. Welding certificates.
- C. Material Certificates: For each of the following, provided by manufacturers:
 - 1. Cementitious materials.
 - 2. Admixtures.
 - 3. Form materials and form-release agents.
 - 4. Steel reinforcement and accessories.
 - 5. Curing compounds.
 - 6. Bonding agents.
 - 7. Adhesives and Vapor retarders.
 - 8. Semi rigid joint filler.
 - 9. Joint-filler strips.
 - 10. Repair materials.

- D. Floor surface flatness and levelness measurements indicating compliance with specified tolerances.
- E. Field quality-control reports.
- F. Minutes of preinstallation conference.
- G. Furnish transit-mix delivery slips to Owner's Representative.

1.05 QUALITY ASSURANCE

- A. Comply with Referenced Standards specified in Division 01 Section "References" in addition to ACI 301.
- B. Perform testing under the provisions of Division 01 Section "Quality Requirements" and the "FIELD QUALITY CONTROL" Article of Part 3 listed in this specification.
- C. Installer Qualifications: A qualified installer who employs on Project personnel qualified as ACI-certified Flatwork Technician and Finisher and a supervisor who is an ACI-certified Concrete Flatwork Technician.
- D. Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C94/C94M requirements for production facilities and equipment.
 - 1. Manufacturer certified according to NRMCA's "Certification of Ready Mixed Concrete Production Facilities."
- E. Testing Agency Qualifications: An independent agency, acceptable to authorities having jurisdiction, qualified according to ASTM C1077 and ASTM E329 for testing indicated.
 - 1. The contractor shall provide an adequately sized, insulated curing box to house concrete cylinders at the discretion of the Architect, for the 48-hour period between concrete pour and sample collection pick-up by the Testing Laboratory (ASTM C31/C31M). As directed by the Architect, the contractor shall cure additional cylinders in the same fashion as the in-place concrete.
 - 2. Curing box shall be located away from the main construction area and shall be blocked up off the ground.
 - 3. A log sheet shall be provided in a waterproof sheet protector to log in the placement and removal of the concrete test samples by the testing laboratory.
 - 4. Minimum information to be logged for each pour date shall include: date of pour, date of pick-up, weather conditions at the time of pour, testing
- F. Source Limitations: Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant, obtain aggregate from single source, and obtain admixtures from single source from single manufacturer. To further insure consistency, coloration, finish and quality; all aggregates, cement, water and other ingredients shall each be secured from the same source for the duration of the project.
 - 1. The batching plant and raw materials may be subject to inspections and test performed by the Architect.
- G. Welding Qualifications: Qualify procedures and personnel according to AWS D1.4/D1.4M, "Structural Welding Code Reinforcing Steel."
- H. ACI Publications: Comply with the following unless modified by requirements in the Contract Documents:
 - 1. ACI 301, "Specifications for Structural Concrete", Sections 1 through 5.

- 3. ACI 304R "Recommended Practice for Measuring, Mixing, Transporting and Placing Concrete".
- I. Concrete Testing Service: Engage a qualified independent testing agency to perform material evaluation tests and to design concrete mixtures.
- J. Preinstallation Conference: Conduct conference at Project site.
 - 1. Before submitting design mixtures, review concrete design mixture and examine procedures for ensuring quality of concrete materials. Require representatives of each entity directly concerned with cast-in-place concrete to attend, including the following:
 - a. Contractor's superintendent.
 - b. Independent testing agency responsible for concrete design mixtures.
 - c. Ready-mix concrete manufacturer.
 - d. Concrete subcontractor.
 - 2. Review special inspection and testing and inspecting agency procedures for field quality control, cold- and hot-weather concreting procedures, curing procedures, construction contraction and isolation joints, and joint-filler strips, semi rigid joint fillers, forms and form removal limitations, shoring and reshoring procedures, vapor-retarder installation, anchor rod and anchorage device installation tolerances, steel reinforcement installation, floor and slab flatness and levelness measurement, concrete repair procedures, and concrete protection.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Steel Reinforcement: Deliver, store, and handle steel reinforcement to prevent bending and damage. Avoid damaging coatings on steel reinforcement.
- B. Store cement off the ground in a dry, weatherproof, adequately ventilated structure with provisions to prevent the absorption of water.
- C. Transport dry concrete batches from the central plant to the site in approved truck mixers conforming to the requirements of the Truck Mixer Manufacturer's Agitating Standards. Each truck shall contain a plate stating the capacity, drum speeds and be provided with a revolution counter.
- D. Packaged material shall be delivered and stored in the original packages until ready for use. Packages or materials showing evidence of water or other damage shall be rejected.
- E. Protect all materials from freezing.

1.07 COORDINATION

- A. Coordinate work under provisions of Division 01 Specification of this Project Manual.
- B. The Contractor shall provide at least five (5) working days advance notice prior to formwork closure to the Architect.
- C. Coordinate work of other Sections in forming and setting openings, slots, recesses, chases, sleeves, bolts, anchors, and other inserts.
- D. Notify Architect a minimum of three (3) working days prior to commencement concrete pours.

1.08 REGULATORY REQUIREMENTS

A. Conform to ACI 304R and all applicable codes for placement of concrete and related work.

1.09 ENVIRONMENTAL REQUIREMENTS

- A. Do not place concrete when the ambient temperature is below 40 deg. F. or when the concrete temperature exceeds 85 deg. F. Under certain circumstances, the Engineer may approve the placement of concrete under the above conditions, provided that the procedures of ACI 305R and ACI 306R are strictly adhered to.
- B. Do not place concrete when the conditions may adversely affect the placing, curing or finishing of concrete, or its strength.
- C. Comply with the requirements contained in Section 016500 NON-PENETRATING ROOFTOP SUPPORT SYSTEMS.

PART 2 - PRODUCTS

2.01 FORM-FACING MATERIALS

- A. Smooth-Formed Finished Concrete: Form-facing panels that will provide continuous, true, and smooth concrete surfaces. Furnish in largest practicable sizes to minimize number of joints.
 - 1. Plywood, metal, or other approved panel materials.
 - 2. Steel forms: Minimum 16 gage thick, stiffened to support weight of concrete with minimum deflection.
 - 3. Exterior-grade plywood panels, suitable for concrete forms, complying with DOC PS 1, and as follows:
 - a. Douglas Fir Species, solid one side grade and sound
- B. Rough-Formed Finished Concrete: Plywood, lumber, metal, or another approved material. Provide lumber dressed on at least two edges and one side for tight fit.
- C. Form-Release Agent: Commercially formulated, colorless, water based, non-toxic, V.O.C. compliant, environmentally safe material which will not stain concrete, absorb moisture or impair natural bonding or color characteristics of coating intended for use on concrete; manufactured by DAYTON SUPERIOR or equal. Agent shall not be detrimental to the environment.
 - 1. Formulate form-release agent with rust inhibitor for steel form-facing materials.
- D. Form Ties: Factory-fabricated, removable or snap-off metal or glass-fiber-reinforced plastic form ties designed to resist lateral pressure of fresh concrete on forms and to prevent spalling of concrete on removal.
 - 1. Furnish units that will leave no corrodible metal closer than 1 inch to the plane of exposed concrete surface.
 - 2. Furnish ties that, when removed, will leave holes no larger than 1 inch in diameter in concrete surface.

2.02 STEEL REINFORCEMENT

- A. Reinforcing Bars: ASTM A615/A615M, Grade 60, deformed.
- B. Deformed-Steel Wire: ASTM A 496.
- C. Plain-Steel Welded Wire Reinforcement: ASTM A 185, plain, fabricated from as-drawn steel wire into flat sheets.

2.03 REINFORCEMENT ACCESSORIES

- A. Joint Dowel Bars: ASTM A615/A615M, Grade 60, plain-steel bars, cut true to length with ends square and free of burrs.
- B. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded wire reinforcement in place. Manufacture bar supports from steel wire, plastic, or precast concrete according to CRSI's "Manual of Standard Practice," of greater compressive strength than concrete and as follows:
 - 1. For concrete surfaces exposed to view where legs of wire bar supports contact forms, use CRSI Class 1 plastic-protected steel wire or CRSI Class 2 stainless-steel bar supports.
 - 2. Provide load bearing pad on bottom to prevent vapor barrier puncture.
- C. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded wire reinforcement in place. Manufacture bar supports from steel wire, plastic, or precast concrete according to CRSI's "Manual of Standard Practice," of greater compressive strength than concrete and as follows:
 - 1. For concrete surfaces exposed to view where legs of wire bar supports contact forms, use CRSI Class 1 plastic-protected steel wire or CRSI Class 2 stainless-steel bar supports.
 - 2. Provide load bearing pad on bottom to prevent vapor barrier puncture.

2.04 CONCRETE MATERIALS

- A. Cementitious Material: Use the following cementitious materials, of the same type, brand, and source, throughout Project:
 - Portland Cement: ASTM C150/C150M, Type IA, gray. Supplement with the following:
 a. Fly Ash: ASTM C618, Class F or C.
 - b. Ground Granulated Blast-Furnace Slag: ASTM C989/C989M, Grade 100 or 120.
 - 2. Silica Fume: ASTM C1240, amorphous silica.
 - 3. Normal-Weight Aggregates: ASTM C33/C33M, No. 57 or 67 crushed stone coarse aggregate or better, graded. Provide aggregates from a single source with documented service record data of at least 10 years' satisfactory service in similar applications and service conditions using similar aggregates and cementitious materials.
 - a. Maximum Coarse-Aggregate Size: 3/4 inch nominal.
 - b. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.
 - 4. Lightweight Aggregate: ASTM C330/C330M, 3/4 inch, nominal maximum aggregate size.
 - 5. Water: ASTM C94/C94M, clean and not detrimental to concrete.

2.05 ADMIXTURES

- A. Air-Entraining Admixture: ASTM C260/C260M.
- B. Chemical Admixtures: Provide admixtures certified by manufacturer to be compatible with other admixtures and that will not contribute water-soluble chloride ions exceeding those permitted in hardened concrete. Do not use calcium chloride or admixtures containing calcium chloride.
 - 1. Water-Reducing Admixture: ASTM C494/C494M, Type A.
 - 2. Retarding Admixture: ASTM C494/C494M, Type B.
 - 3. Water-Reducing and Retarding Admixture: ASTM C494/C494M, Type D.
 - 4. High-Range, Water-Reducing Admixture: ASTM C494/C494M, Type F.
 - 5. High-Range, Water-Reducing and Retarding Admixture: ASTM C494/C494M, Type G.
 - 6. Plasticizing and Retarding Admixture: ASTM C 1017, Type II.

2.06 CURING MATERIALS

- A. Absorptive Cover: AASHTO M 182, Class 2, burlap cloth made from jute or kenaf, weighing approximately 8 oz. /sq. yd. when dry.
- B. Moisture-Retaining Cover: ASTM C171, polyethylene film or white burlap-polyethylene sheet weighing approximately 8 oz. / sq. yd. bonded to prevent separation during use.
- C. Membrane curing compound: Moisture Retention complying with ASTM C309. Products: EUCOCURE VOX by Euclid Chemical Company or equal.
- D. Water: Potable.
- E. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C309, Type 1, Class B, dissipating.
 - 1. Products: Eucocure VOX as manufactured by Euclid Chemical Company or approved equal.

2.07 RELATED MATERIALS

- A. Expansion- and Isolation-Joint-Filler Strips: ASTM D1751, 1/2" asphalt-saturated cellulosic fiber.
- B. Bonding Agent: ASTM C1059/C1059M, Type II, non-redispersible, acrylic emulsion or styrene butadiene.
- C. Epoxy Bonding Adhesive: three-component, solvent-free, moisture tolerant, epoxy modified cementitious product.
 - 1. Product: Armatec 110 EpoCem as manufactured by Sika Corporation or specifically approved equal.
 - 2. Types I and II, non-load bearing Types IV and V, load bearing, for bonding hardened or freshly mixed concrete to hardened concrete.
- D. Non-Shrink Grout: Premixed compound, free of chlorides, with non-metallic aggregate, cement water reducing and plasticizing agents; capable of minimum compressive strength of 2400 psi at 48 hours and 7000 psi at 28 days. Grout shall be suitable for contact with potable water. For equipment bases and pipe supports, use non-shrink grout by Master Builders, Embeco 636, Unisorb V-1 or equal.
- E. Reglets: Fabricate reglets of galvanized-steel sheet not less than 26 gauge material; in the longest lengths possible with alignment splines for joints; secure to formwork; Type CO as manufactured by Fry Reglet or approved equal. Temporarily fill or cover face opening of reglet to prevent intrusion of concrete or debris.
- F. Dovetail Anchor Slots: Hot-dip galvanized-steel sheet, not less than 0.034 inches (0.85 mm) thick, with bent tab anchors. Temporarily fill or cover face opening of slots to prevent intrusion of concrete or debris.

2.08 REPAIR MATERIALS

- A. Repair Underlayment: Cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from 1/8 inch and that can be feathered at edges to match adjacent floor elevations.
 - 1. Cement Binder: ASTM C150/C150M, Portland cement or hydraulic or blended hydraulic cement as defined in ASTM C 219.

- 2. Primer: Product of underlayment manufacturer recommended for substrate, conditions, and application.
- 3. Aggregate: Well-graded, washed gravel, 1/8 to 1/4 inch or coarse sand as recommended by underlayment manufacturer.
- 4. Compressive Strength: Not less than 4000 psi at 28 days when tested according to ASTM C39/C39M.

2.09 PARGING

- A. Parge exterior faces of above-grade masonry walls, where indicated, in 2 uniform coats to a total thickness of 3/4 inch. Dampen wall before applying first coat and scarify first coat to ensure full bond to subsequent coat.
- B. Use a steel-trowel finish to produce a smooth, flat, dense surface with a maximum surface variation of 1/8 inch per foot. Form a wash at top of parging and a beveled return concealed at the bottom edge.
- C. Damp-cure parging for at least 24 hours and protect parging until cured.

2.10 CONCRETE MIXTURES, GENERAL

- A. Prepare design mixtures for each type and strength of concrete, proportioned on the basis of laboratory trial mixture or field test data, or both, according to ACI 211.1 and ACI 301.
 - 1. Use a qualified independent testing agency for preparing and reporting proposed mixture designs based on laboratory trial mixtures.
- B. Cementitious Materials: Limit percentage, by weight, of cementitious materials other than Portland cement in concrete as follows:
 - 1. Fly Ash: 25 percent.
 - 2. Combined Fly Ash and Pozzolan: 25 percent.
 - 3. Ground Granulated Blast-Furnace Slag: 50 percent.
 - 4. Combined Fly Ash or Pozzolan and Ground Granulated Blast-Furnace Slag: 50 percent Portland cement minimum, with fly ash or Pozzolan not exceeding 25 percent.
 - 5. Silica Fume: 10 percent.
 - 6. Combined Fly Ash, Pozzolans, and Silica Fume: 35 percent with fly ash or pozzolans not exceeding 25 percent and silica fume not exceeding 10 percent.
 - Combined Fly Ash or Pozzolans, Ground Granulated Blast-Furnace Slag, and Silica Fume: 50 percent with fly ash or pozzolans not exceeding 25 percent and silica fume not exceeding 10 percent.
 - 8. Limit water-soluble, chloride-ion content in hardened concrete to 0.06 percent by weight of cement.
- C. Admixtures: Use admixtures according to manufacturer's written instructions.
 - 1. Use plasticizing admixture in concrete, as required, for placement and workability.
 - 2. Use water-reducing and retarding admixture when required by high temperatures, low humidity, or other adverse placement conditions.
 - 3. Use water-reducing admixture in pumped concrete, concrete for heavy-use industrial slabs and parking structure slabs, concrete required to be watertight, and concrete with a water-cementitious materials ratio below 0.50.

2.11 CONCRETE MIXTURES FOR BUILDING ELEMENTS

- A. Proportion normal-weight concrete mixture as follows:
 - 1. Minimum Compressive Strength: Pier, Mat and Spread Footings; foundation walls, slab on grade and slab on metal deck: 4000 psi at 28 days.
 - 2. Maximum Water-Cementitious Materials Ratio: 0.50 for all concrete building elements.

- 3. Slump Limits (Conventional Mix):
 - a. Slabs: 3 inches plus or minus one inch.
- 4. Slump Limits (Pump Mix):
 - a. Final slump (Slabs): 6 1/2 inches plus or minus one inch.
- 5. Air Content:
 - a. Slabs: 3 percent, plus or minus 1.0 percent at point of delivery. Do not allow air content of trowel finished concrete floors to exceed 3 percent.
- 6. Large Aggregates: 3/4" crushed stone; ASTM C33/C33M, No. 67.
- 7. Use Admixtures only when approved by the Engineer.
- 8. Mix Grout in accordance with the manufacturer's instructions and specifications.
- B. All concrete for the clear-well and backwash waste tank construction shall include Krystol Internal Membrane (KIM)® integral water repellent admixture as manufactured by Kryton or specifically approved equal. Admixture shall be added at a rate as recommended by the approved manufacturer.

2.12 FABRICATING REINFORCEMENT

A. Fabricate steel reinforcement according to CRSI's "Manual of Standard Practice."

2.13 CONCRETE MIXING

- A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C94/C94M and ASTM C1116/C1116M, and furnish batch ticket information.
 - When air temperature is between 85 and 90 deg F, reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F, reduce mixing and delivery time to 60 minutes.
- B. Project-Site Mixing: Measure, batch, and mix concrete materials and concrete according to ASTM C94/C94M. Mix concrete materials in appropriate drum-type batch machine mixer.
 - 1. For mixer capacity of 1 cu. yd. or smaller, continue mixing at least 1-1/2 minutes, but not more than 5 minutes after ingredients are in mixer, before any part of batch is released.
 - 2. For mixer capacity larger than 1 cu. yd., increase mixing time by 15 seconds for each additional 1 cu. yd..
 - 3. Provide batch ticket for each batch discharged and used in the Work, indicating Project identification name and number, date, mixture type, mixture time, quantity, and amount of water added. Record approximate location of final deposit in structure.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Verify lines, levels, and measurements before proceeding with formwork. Ensure that dimensions agree with the plans.
- B. Inspect the formwork and reinforcing that it has been properly set and secured and that all items to be embedded, built-in or pass through concrete are at their proper locations and elevations.
- C. The General Construction Contractor shall verify that all other prime contractors have installed concrete inserts, sleeves, and embedded elements of the project, such as conduit, and their work has been totally completed and inspected by the Architect.
- D. Ensure that all points of contact with new grout are free from oil, grease and scale.

3.02 FORMWORK

- A. Design, erect, shore, brace, and maintain formwork, according to ACI 301, to support vertical, lateral, static, and dynamic loads, and construction loads that might be applied, until structure can support such loads.
- B. Construct formwork so concrete members and structures are of size, shape, alignment, elevation, and position indicated, within tolerance limits of ACI 117.
- C. Limit concrete surface irregularities, designated by ACI 347R as abrupt or gradual, as follows:
 - 1. Class A, 1/8 inch for smooth-formed finished surfaces.
 - 2. Class B, 1/4 inch for rough-formed finished surfaces.
 - a. Hand trim sides and bottom of earth forms and remove loose soil to the satisfaction of the Architect.
 - b. Remove water from forms and excavations and divert water flow to avoid washing over, under or though freshly placed concrete.
- D. Construct forms tight enough to prevent loss of concrete mortar. Align form joints.
- E. Do not apply form release agent where concrete surfaces are to receive special finishes or applied coatings that may be affected by the agent.
- F. Fabricate forms for easy removal without hammering or prying against concrete surfaces. Provide crush or wrecking plates where stripping may damage cast concrete surfaces. Provide top forms for inclined surfaces steeper than 1.5 horizontal to 1 vertical.
 - 1. Install keyways, reglets, recesses, and the like, for easy removal.
 - 2. Do not use rust-stained steel form-facing material.
- G. Set edge forms, bulkheads, and intermediate screed strips for slabs to achieve required elevations and slopes in finished concrete surfaces. Provide and secure units to support screed strips; use strike-off templates or compacting-type screeds.
- H. Provide temporary openings for cleanouts and inspection ports where interior area of formwork is inaccessible. Close openings with panels tightly fitted to forms and securely braced to prevent loss of concrete mortar. Locate temporary openings in forms at inconspicuous locations.
- I. Chamfer: Provide 3/4" inch chamfer on all exterior horizontal and vertical corners and edges of permanently exposed concrete.
- J. Form openings, chases, offsets, sinkages, keyways, reglets, blocking, screeds, and bulkheads required in the Work. Determine sizes and locations from trades providing such items.
- K. Clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, and other debris just before placing concrete.
- L. Retighten forms and bracing before placing concrete, as required, to prevent mortar leaks and maintain proper alignment.
- M. Coat contact surfaces of forms with form-release agent, according to manufacturer's written instructions, before placing reinforcement. Do not apply form release agent where concrete surfaces are to receive special finishes or applied coatings that may be affected by the agent.
- N. Where new concrete is doweled to existing work, drill holes in existing concrete, insert steel dowels and pack with non-metallic/ non-shrink grout.

O. Prepare previously placed concrete by cleaning with steel brush and apply a Bonding Agent in accordance with the manufacturer's specifications and instructions.

3.03 EMBEDDED ITEMS

- A. Place and secure anchorage devices and other embedded items required for adjoining work that is attached to or supported by cast-in-place concrete. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
 - Install anchor rods, accurately located, to elevations required and complying with tolerances in Section 7.5 of AISC's "Code of Standard Practice for Steel Buildings and Bridges."
 - 2. Install reglets to receive waterproofing and to receive through-wall flashings in outer face of concrete frame at exterior walls, where flashing is shown at lintels, shelf angles, and other conditions.
 - 3. Install dovetail anchor slots in concrete structures as indicated.
 - 4. Ensure that all inserts and embedded items are not disturbed during concrete placement.

3.04 REMOVING AND REUSING FORMS

- A. General: Formwork for sides of beams, walls, columns, and similar parts of the Work that does not support weight of concrete may be removed after cumulatively curing at not less than 50 deg F for 24 hours after placing concrete. Concrete has to be hard enough to not be damaged by form-removal operations and curing and protection operations need to be maintained.
 - 1. Leave formwork for beam soffits, joists, slabs, and other structural elements that supports weight of concrete in place until concrete has achieved at least 70 percent of its 28-day design compressive strength.
 - 2. Remove forms only if shores have been arranged to permit removal of forms without loosening or disturbing shores.
- B. Clean and repair surfaces of forms to be reused in the Work. Split, frayed, delaminated, or otherwise damaged form-facing material will not be acceptable for exposed surfaces. Apply new form-release agent.
- C. When forms are reused, clean surfaces, remove fins and laitance, and tighten to close joints. Align and secure joints to avoid offsets. Do not use patched forms for exposed concrete surfaces unless approved by Architect.

3.05 SHORES AND RESHORES

- A. Comply with ACI 318 and ACI 301 for design, installation, and removal of shoring and reshoring.
 - 1. Do not remove shoring or reshoring until measurement of slab tolerances is complete.
- B. In multistory construction, extend shoring or reshoring over a sufficient number of stories to distribute loads in such a manner that no floor or member will be excessively loaded or will induce tensile stress in concrete members without sufficient steel reinforcement.
- C. Plan sequence of removal of shores and reshore to avoid damage to concrete. Locate and provide adequate reshoring to support construction without excessive stress or deflection.

3.06 STEEL REINFORCEMENT

- A. General: Comply with CRSI's "Manual of Standard Practice" for placing reinforcement.
 - 1. Do not cut or puncture vapor retarder. Repair damage and reseal vapor retarder before placing concrete.

- B. Clean reinforcement of loose rust and mill scale, earth, ice, and other foreign materials that would reduce bond to concrete.
- C. Accurately position, support, and secure reinforcement against displacement. Locate and support reinforcement with bar supports to maintain minimum concrete cover. Do not tack weld crossing reinforcing bars. Use reinforcing splices at minimum of locations and only at locations of minimum stress. Review locations of splices with Architect. Splice locations shall be approved during shop drawing review phase. Rebar splice overly shall be the minimum length as per ACI 318.
 - 1. Weld reinforcing bars according to AWS D1.4/D1.4M, where indicated.
- D. Set wire ties with ends directed into concrete, not toward exposed concrete surfaces.
- E. Install welded wire reinforcement in longest practicable lengths on bar supports spaced t minimize sagging. Lap edges and ends of adjoining sheets at least one mesh spacing. Offset laps of adjoining sheet widths to prevent continuous laps in either direction. Lace overlaps with wire.
- F. Take necessary measures to ensure that reinforcement is not disturbed during the placement of concrete.

3.07 JOINTS

- A. General: Construct joints true to line with faces perpendicular to surface plane of concrete.
- B. Construction Joints: Install so strength and appearance of concrete are not impaired, at locations indicated or as approved by Architect.
 - 1. Place joints perpendicular to main reinforcement. Continue reinforcement across construction joints unless otherwise indicated. Do not continue reinforcement through sides of strip placements of floors and slabs.
 - 2. Form keyed joints as indicated. Embed keys at least 1-1/2 inches into concrete.
 - 3. Locate joints for beams, slabs, joists, and girders in the middle third of spans. Offset joints in girders a minimum distance of twice the beam width from a beam-girder intersection.
 - 4. Locate horizontal joints in walls and columns at underside of floors, slabs, beams, and girders and at the top of footings or floor slabs.
 - 5. Space vertical joints in walls as indicated or at 20' o.c. maximum. Locate joints beside piers integral with walls, near corners, and in concealed locations where possible.
 - 6. Use epoxy-bonding adhesive at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.
- C. Contraction / Control Joints in Slabs-on-Grade: Form weakened-plane contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to at least one-fourth of concrete thickness as follows:
 - 1. Sawed Joints: Form contraction joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 3/16"-inch- wide joints into concrete when cutting action will not tear, abrade, or otherwise damage surface and before concrete develops random contraction cracks.
- D. Isolation Joints in Slabs-on-Grade: After removing formwork, install joint-filler strips at slab junctions with vertical surfaces, such as column pedestals, foundation walls, grade beams, and other locations, as indicated.
 - 1. Extend joint-filler strips full width and depth of joint, terminating flush with finished concrete surface unless otherwise indicated.

- 2. Terminate full-width joint-filler strips not less than 1/2 inch or more than 1 inch below finished concrete surface where joint sealants, specified in Section 079200 JOINT SEALANTS are indicated.
- 3. Install joint-filler strips in lengths as long as practicable. Where more than one length is required, lace or clip sections together.
- E. Doweled Joints: Install dowel bars and support assemblies at joints where indicated. Lubricate or asphalt coat one-half of dowel length to prevent concrete bonding to one side of joint.
- F. Ensure joint fillers and devices are not disturbed during placement of concrete.
- G. Install all joint fillers and devices in accordance with the manufacturer's instructions and specifications for floor and wall finish.
- H. Install joint device anchors. Maintain correct position to allow joint cover flush with floor and wall finish.
- I. Install joint covers in one-piece length when adjacent construction activity is complete.
- J. Apply sealants in joint devices in accordance with the manufacturer's specifications and instructions.

3.08 CONCRETE PLACEMENT

- A. Before placing concrete, verify that installation of formwork, reinforcement, and embedded items is complete and that required inspections have been performed.
- B. Do not add water to concrete during delivery, at Project site, or during placement unless approved by Architect.
- C. Before test sampling and placing concrete, water may be added at Project site, subject to limitations of ACI 301.
 - 1. Do not add water to concrete after adding high-range water-reducing admixtures to mixture.
 - 2. Place concrete with the aid of mechanical vibrators which are capable of transmitting to the concrete not less than 3,000 impulses per minute. Maintain at least three (3) vibrators in good working condition, ready for use when concrete placement begins in any one area.
 - 3. Do not interrupt successive placement. Do not permit cold joints to occur.
- D. 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.
 - 1. Deposit concrete in horizontal layers of depth to not exceed formwork design pressures and in a manner to avoid inclined construction joints.
 - 2. Consolidate placed concrete with mechanical vibrating equipment according to ACI 301.
 - 3. Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations to rapidly penetrate placed layer and at least 6 inches into preceding layer. Do not insert vibrators into lower layers of concrete that have begun to lose plasticity. At each insertion, limit duration of vibration to time necessary to consolidate concrete and complete embedment of reinforcement and other embedded items without causing mixture constituents to segregate.
- E. Deposit and consolidate concrete for floors and slabs in a continuous operation, within limits of construction joints, until placement of a panel or section is complete.

- 1. Consolidate concrete during placement operations so concrete is thoroughly worked around reinforcement and other embedded items and into corners.
- 2. Maintain reinforcement in position on chairs during concrete placement.
- 3. Screed slab surfaces with a straightedge and strike off to correct elevations.
- 4. Slope surfaces uniformly to drains where required.
- 5. Begin initial floating using bull floats or darbies to form a uniform and open-textured surface plane, before excess bleedwater appears on the surface. Do not further disturb slab surfaces before starting finishing operations.
- F. Cold-Weather Placement: Comply with ACI 306.1 and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.
 - 1. When average high and low temperature is expected to fall below 40 deg F for three successive days, maintain delivered concrete mixture temperature within the temperature range required by ACI 301.
 - 2. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.
 - 3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in mixture designs.
- G. Hot-Weather Placement: Comply with ACI 301 and ACI 305R and as follows:
 - 1. Maintain concrete temperature below 95 deg F at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
 - 2. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade uniformly moist without standing water, soft spots, or dry areas.
 - 3. Maintain records of concrete placement. Record date, locations, quantity, air temperature and test samples taken.
 - 4. In areas with floor drains, maintain floor elevations at walls; pitch surfaces uniformly to the drains maintaining a 1% slope.
 - 5. Cure floor surfaces in accordance with ACI 308R.
 - 6. Apply curing compound in accordance with the manufacturer's specifications and instructions in two (2) coats with the second coat at right angles to the first.

3.09 FINISHING FORMED SURFACES

- A. Rough-Formed Finish: As-cast concrete texture imparted by form-facing material with tie holes and defects repaired and patched. Remove fins and other projections that exceed specified limits on formed-surface irregularities.
 - 1. Apply to concrete surfaces not exposed to public view.
- B. Smooth-Formed Finish: As-cast concrete texture imparted by form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams. Repair and patch tie holes and defects. Remove fins and other projections that exceed specified limits on formed-surface irregularities.
 - 1. Apply to concrete surfaces exposed to public view.
- C. Rubbed Finish: Apply the following to smooth-formed finished as-cast concrete where indicated:
 - 1. Smooth-Rubbed Finish: Not later than one day after form removal, moisten concrete surfaces and rub with carborundum brick or another abrasive until producing a uniform color and texture. Do not apply cement grout other than that created by the rubbing process.

D. Related Unformed Surfaces: At tops of walls, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces, strike off smooth and finish with a texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces unless otherwise indicated.

3.10 FINISHING FLOORS AND SLABS

- A. General: Comply with ACI 302.1R recommendations for screeding, re-straightening, and finishing operations for concrete surfaces. Do not wet concrete surfaces.
- B. Scratch Finish: While still plastic, texture concrete surface that has been screeded and bull-floated or darbied. Use stiff brushes, brooms, or rakes to produce a profile amplitude of 1/4 inch 6 mm in one direction.
- C. Float Finish: Consolidate surface with power-driven floats or by hand floating if area is small or inaccessible to power driven floats. Re-straighten, cut down high spots, and fill low spots. Repeat float passes and re-straightening until surface is left with a uniform, smooth, granular texture.
 - 1. Apply float finish to surfaces to receive trowel finish and to be covered with fluid-applied or sheet waterproofing, built-up or membrane roofing, or sand-bed terrazzo.
- D. Trowel Finish: After applying float finish, apply first troweling and consolidate concrete by hand or power-driven trowel. Continue troweling passes and re-straighten until surface is free of trowel marks and uniform in texture and appearance. Grind smooth any surface defects that would telegraph through applied coatings or floor coverings.
 - 1. Apply a trowel finish to surfaces exposed to view or to be covered with resilient flooring, carpet, and ceramic or quarry tile set over a cleavage membrane, paint, or another thin-film-finish coating system.
 - 2. Finish surfaces to the following tolerances, according to ASTM E1155, for a randomly trafficked floor surface:
 - a. Specified overall values of flatness, F (F) 30; and of levelness, F (L) 20; with minimum local values of flatness, F (F) 24; and of levelness, F (L) 15; for suspended slabs.
 - 3. Finish and measure surface so gap at any point between concrete surface and an unleveled, freestanding, 10-ft. long straightedge resting on two high spots and placed anywhere on the surface does not exceed 3/16 inch.
- E. Decorative Exposed Surfaces: Trowel as described in ACI 302.1R; use steel-reinforced plastic trowel blades instead of steel blades to avoid black-burnish marks; decorative exposed surfaces include surfaces to be stained or dyed, pigmented concrete, surfaces to receive liquid hardeners, surfaces to receive dry-shake hardeners, surfaces to be polished, and all other exposed slab surfaces.
- F. Trowel and Fine-Broom Finish: Apply a first trowel finish to surfaces where ceramic or quarry tile is to be installed by either thickset or thin-set method. While concrete is still plastic, slightly scarify surface with a fine broom.
 - 1. This surface shall be used for interior and exterior walking surfaces unless noted otherwise. Finish edges of exterior walkway flags with steel tooled radius edge.
 - 2. Comply with flatness and levelness tolerances for trowel-finished floor surfaces.
- G. Broom Finish: Apply a broom finish to exterior concrete platforms, steps, ramps, equipment pads, and elsewhere as indicated.
 - 1. Immediately after float finishing, slightly roughen trafficked surface by brooming with fiber-bristle broom perpendicular to main traffic route. Coordinate required final finish with Architect before application.

- H. Slip-Resistive Finish: Before final floating, apply slip-resistive finish where indicated and to concrete stair treads, platforms, and ramps. Apply according to manufacturer's written instructions and as follows:
 - 1. Uniformly spread 25 lb. /100 sq. ft. of dampened slip-resistive over surface in one or two applications. Tamp aggregate flush with surface, but do not force below surface.
 - 2. After broadcasting and tamping, apply float finish.
 - 3. After curing, lightly work surface with a steel wire brush or an abrasive stone and water to expose slip-resistive aluminum granules.

3.11 MISCELLANEOUS CONCRETE ITEMS

- A. Filling In: Fill in holes and openings left in concrete structures after work of other trades is in place unless otherwise indicated. Mix, place, and cure concrete, as specified, to blend with in-place construction. Provide other miscellaneous concrete filling indicated or required to complete the Work.
- B. Curbs: Provide monolithic finish to interior curbs by stripping forms while concrete is still green and by steel-troweling surfaces to a hard, dense finish with corners, intersections, and terminations slightly rounded.
- C. All exposed horizontal and vertical wall and slab corners shall have a ³/₄" wide chamfered edge.
- D. Equipment Bases and Foundations:
 - 1. Coordinate sizes and locations of concrete bases with actual equipment provided.
 - 2. Construct concrete bases 6 inches high unless otherwise indicated; and extend base not less than 6 inches in each direction beyond the maximum dimensions of supported equipment unless otherwise indicated or unless required for seismic anchor support.
 - 3. Minimum Compressive Strength: 4000 psi at 28 days.
 - 4. Install dowel rods to connect concrete base to concrete floor. Unless otherwise indicated, install dowel rods on 12 inch centers around the full perimeter of concrete base.
 - 5. For supported equipment, install epoxy-coated anchor bolts that extend through concrete base, and anchor into structural concrete substrate.
 - 6. Prior to pouring concrete, place and secure anchorage devices. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
 - 7. Cast anchor-bolt inserts into bases. Install anchor bolts to elevations required for proper attachment to supported equipment.
- E. Steel Pan Stairs: Provide concrete fill for steel pan stair treads, landings, and associated items. Cast-in inserts and accessories as shown on Drawings. Screed, tamp, and trowel finish concrete surfaces.
- F. Grout: Install grout in accordance with the manufacturer's specifications and instructions. Moisten concrete and grout surfaces and allow drying until damp. Remove all standing water. Pump or inject grout into tight spaces to ensure intimate contact with the existing grout. Cure grout with an appropriate membrane in accordance with the manufacturer's specifications and instructions.

3.12 CONCRETE PROTECTION AND CURING

- A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and ACI 301 and ACI 305R for hot-weather protection during curing.
- B. Evaporation Retarder: Apply evaporation retarder to unformed concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb./sq. ft. x h before and during finishing

operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.

- C. Formed Surfaces: Cure formed concrete surfaces, including underside of beams, supported slabs, and other similar surfaces. If forms remain during curing period, moist cure after loosening forms. If removing forms before end of curing period, continue curing for the remainder of the curing period.
- D. Unformed Surfaces: Begin curing immediately after finishing concrete. Cure unformed surfaces, including floors and slabs, concrete floor toppings, and other surfaces.
- E. Cure concrete according to ACI 308R and ACI 308.1, by one or a combination of the following methods:
 - 1. Moisture Curing: Keep surfaces continuously moist for not less than seven days with the following materials:
 - a. Water.
 - b. Continuous water-fog spray.
 - c. Absorptive cover, water saturated, and kept continuously wet. Cover concrete surfaces and edges with 12-inch lap over adjacent absorptive covers.
 - Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches, and sealed by waterproof tape or adhesive. Cure for not less than seven days. Immediately repair any holes or tears during curing period using cover material and waterproof tape.
 - a. Moisture cure or use moisture-retaining covers to cure concrete surfaces to receive floor coverings.
 - b. Moisture cure or use moisture-retaining covers to cure concrete surfaces to receive penetrating liquid floor treatments.
 - c. Cure concrete surfaces to receive floor coverings with either a moisture-retaining cover or a curing compound that the manufacturer certifies will not interfere with bonding of floor covering used on Project.
- F. Liquid sealer/hardener to be applied on exposed concrete cured with moisture retentive or absorptive covers. The following materials provide varying levels of protection, sealant and hardness. Review products for project appropriateness.
 - 1. Euclid: Euco Diamond Hard (Liquid Sealer and Hardener)
 - 2. L&M Construction Chemicals: Seal Hard (Liquid Sealer and Hardener)
 - 3. Curecrete Chemical Company: Ashford Formula (Liquid Sealer and Hardener)
 - 4. Midwest Floor Care: Structure Formula (Liquid Sealer and Hardener)
 - 5. Or approved equal.

3.13 JOINT FILLING

- A. Prepare, clean, and install joint filler according to manufacturer's written instructions.
 - 1. Defer joint filling until concrete has aged at least three month(s). Do not fill joints until construction traffic has permanently ceased.
- B. Remove dirt, debris, saw cuttings, curing compounds, and sealers from joints; leave contact faces of joint clean and dry.
- C. Install semi rigid joint filler full depth in saw-cut joints and at least 2 inches deep in formed joints. Overfill joint and trim joint filler flush with top of joint after hardening.

3.14 CONCRETE SURFACE REPAIRS

- A. Defective Concrete: Repair and patch defective areas when approved by Engineer. Remove and replace concrete that cannot be repaired and patched to Engineer's approval.
- B. Immediately remove all rust spots that have developed during the construction period as soon as directed by the Architect. Remove all rust spots that have formed by the use of temporary handrails.

3.15 FIELD QUALITY CONTROL

- A. Testing and Inspecting: Owner will engage a special inspector and/or qualified testing and inspecting agency to perform field tests and inspections and prepare test reports. Contractor is responsible to notify the Owners representative at least 72 hours prior to the scheduled work that requires inspection / testing. The presence of the Inspector engaged by the Owner does not relieve the contractor of Quality Control Requirements.
- B. Testing and Inspecting: Engage a qualified testing and inspecting agency to perform tests and inspections and to submit reports.
- C. Inspections:
 - 1. Steel reinforcement placement.
 - 2. Headed bolts and studs.
 - 3. Steel reinforcement welding.
 - 4. Concrete placement, including conveying and depositing.
 - 5. Curing procedures and maintenance of curing temperature.
 - 6. Verification of concrete strength before removal of shores and forms from beams and slabs.
- D. Concrete Tests: Testing of composite samples of fresh concrete obtained according to ASTM C172/C172M shall be performed according to the following requirements:
 - 1. Testing Frequency: Obtain one composite sample for each day's pour of each concrete mixture exceeding 5 cu. yd., but less than 25 cu. yd., plus one set for each additional 50 cu. yd. or fraction thereof.
 - a. Frequency of testing will provide fewer than five compressive-strength tests for each concrete mixture, testing shall be conducted from at least five randomly selected batches or from each batch if fewer than five are used.
 - b. One (1) additional test cylinder shall be taken during cold weather and be cured under the same conditions as the concrete it represents.
 - 2. Slump: ASTM C 143; one test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mixture. Perform additional tests when concrete consistency appears to change.
 - 3. Air Content: ASTM C 231, pressure method, for normal-weight concrete; ASTM C173/C173M, volumetric method, for structural lightweight concrete; one test for each composite sample, but not less than one test for each day's pour of each concrete mixture.
 - 4. Concrete Temperature: ASTM C 1064; one test hourly when air temperature is 40 deg F and below and when 80 deg F and above, and one test for each composite sample.
 - 5. Unit Weight: ASTM C 567, fresh unit weight of structural lightweight concrete; one test for each composite sample, but not less than one test for each day's pour of each concrete mixture.
 - 6. Compression Test Specimens: ASTM C31/C31M.
 - a. Cast and laboratory cure two sets of two standard cylinder specimens for each composite sample.
 - b. Cast and field cure two Insert number sets of two standard cylinder specimens for each composite sample.

- 7. Compressive-Strength Tests: ASTM C39/C39M; test one set of two laboratory-cured specimens at 7 days and one set of two specimens at 28 days.
 - a. Test one set of two field-cured specimens at 7 days and one set of two specimens at 28 days.
 - b. A compressive-strength test shall be the average compressive strength from a set of two specimens obtained from same composite sample and tested at age indicated.
- 8. When strength of field-cured cylinders is less than 85 percent of companion laboratory-cured cylinders, Contractor shall evaluate operations and provide corrective procedures for protecting and curing in-place concrete.
- Strength of each concrete mixture will be satisfactory if every average of any three consecutive compressive-strength tests equals or exceeds specified compressive strength and no compressive-strength test value falls below specified compressive strength by more than 500 psi.
- 10. Test results shall be reported in writing to Architect, concrete manufacturer, and Contractor within 48 hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in Work, design compressive strength at 28 days, concrete mixture proportions and materials, compressive breaking strength, and type of break for both 7 and 28-day tests.
- 11. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by Architect but will not be used as sole basis for approval or rejection of concrete.
- 12. Additional Tests: Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by Architect. Testing and inspecting agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42 or by other methods as directed by Architect.
- 13. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.
- 14. Correct deficiencies in the Work that test reports and inspections indicate do not comply with the Contract Documents.
- E. Measure floor and slab flatness and levelness according to ASTM E1155 within 72 hours of finishing.

END OF SECTION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. Section Includes:
 - 1. Structural steel.
 - 2. Field-installed shear connectors.
- B. Related Requirements:
 - 1. Division 01- "Quality Requirements" for independent testing agency procedures and administrative requirements.
 - 2. Section 053100 "Steel Decking" for field installation of shear connectors through deck.
 - 3. Section 055000 "Metal Fabrications" for steel lintels and shelf angles not attached to structural-steel frame not defined as structural steel.
 - 4. Section 055100 "Metal Stairs"
 - 5. Section 099100 "Painting" for surface-preparation and priming requirements.

1.03 DEFINITIONS

- A. Structural Steel: Elements of the structural frame indicated on Drawings and as described in AISC 303, "Code of Standard Practice for Steel Buildings and Bridges."
- B. Seismic-Load-Resisting System: Elements of structural-steel frame designated as "SLRS" or along grid lines designated as "SLRS" on Drawings, including columns, beams, and braces and their connections.
- C. Heavy Sections: Rolled and built-up sections as follows:
 - 1. Shapes included in ASTM A6/A6M with flanges thicker than 1-1/2 inches (38 mm).
 - 2. Welded built-up members with plates thicker than 2 inches (50 mm).
 - 3. Column base plates thicker than 2 inches (50 mm).

1.04 COORDINATION

- A. Coordinate selection of shop primers with topcoats to be applied over them. Comply with paint and coating manufacturers' written recommendations to ensure that shop primers and topcoats are compatible with one another.
- B. Coordinate installation of anchorage items to be embedded in or attached to other construction without delaying the Work. Provide setting diagrams, sheet metal templates, instructions, and directions for installation.

1.05 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.06 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: Show fabrication of structural-steel components.

- 1. Shop drawings and required calculations shall bear the seal and signature of a registered Professional Engineer licensed in the state in which the project is located. Structural steel shop drawings will not be reviewed without said seal and signature.
 - a. A full set of engineered calculations for all beam to column moment connections shall be submitted to the engineer of record for approval. The steel fabricator drawings shall not be reviewed without said engineering calculations affixed with a seal and signature of a professional engineer licensed in the state in which the project is located.
- 2. Include details of cuts, connections, splices, camber, holes, and other pertinent data.
- 3. Include embedment Drawings.
- 4. Indicate profiles, sizes, spacing and locations of structural members, openings, attachments, fasteners, connections, cambers, holes and other pertinent data. Include locations of structural members, openings, attachments and loads.
- 5. Indicate welds by standard AWS symbols, distinguishing between shop and field welds, and show size, length, and type of each weld. Show backing bars that are to be removed and supplemental fillet welds where backing bars are to remain.
- 6. Indicate type, size, and length of bolts, distinguishing between shop and field bolts. Identify pretensioned and slip-critical, high-strength bolted connections.
- 7. For structural steel connections indicated to comply with design loads, include structural design data signed and sealed by the qualified professional engineer responsible for their preparation.
- C. Welding Procedure Specifications (WPSs) and Procedure Qualification Records (PQRs): Provide according to AWS D1.1/D1.1M, "Structural Welding Code - Steel," for each welded joint qualified by testing, including the following:
 - 1. Power source (constant current or constant voltage).
 - 2. Electrode manufacturer and trade name, for demand critical welds.
- D. Delegated-Design Submittal: For structural-steel connections indicated to comply with design loads, include analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.07 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For installer / fabricator.
- B. Welding certificates: Submit certificates certifying that welders employed in the work have met AWS qualifications within in the previous 12 months.
- C. Paint Compatibility Certificates: From manufacturers of topcoats applied over shop primers, certifying that shop primers are compatible with topcoats.
- D. Mill test reports for structural steel, including chemical and physical properties. Indicate structural strength, destructive and non-destructive test analysis.
- E. Product Test Reports: For the following:
 - 1. Bolts, nuts, and washers including mechanical properties and chemical analysis.
 - 2. Direct-tension indicators.
 - 3. Tension-control, high-strength, bolt-nut-washer assemblies.
 - 4. Shear stud connectors.
 - 5. Shop primers.
 - 6. Non-shrink grout.

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1.08 QUALITY ASSURANCE

- A. Fabricator Qualifications: A qualified fabricator that participates in the AISC Quality Certification Program and is designated an AISC-Certified Plant, Category STD.
- B. Fabricator shall have a minimum of five (5) years documented experience with performing the work of this section.
- C. Installer Qualifications: A qualified installer specializing in performing the work of this section with a minimum of three (3) years of documented experience.
- D. Delegated Connection Designer: Connections not fully detailed or shown with "minimum requirements" on the contract drawings shall be designed under the direct supervision of a professional structural engineer experienced in the design of this work and licensed in the state in which the work is located. The shop drawings shall bear the seal and signature of same professional engineer.
- E. Welding Qualifications: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code Steel."
 - 1. Welders and welding operators performing work on bottom-flange, demand-critical welds shall pass the supplemental welder qualification testing, as required by AWS D1.8/D1.8M. FCAW-S and FCAW-G shall be considered separate processes for welding personnel qualification.
 - 2. Welders who are welding structural members fabricated in the shop or in the field, in the five boroughs must have a NYCDOB issued welder licence.
- F. Comply with applicable provisions of the following specifications and documents:
 - 1. AISC Code of Standard Practice for Steel Buildings and Bridges AISC 303.
 - AISC Specifications for the Design, Fabrication and Erection of Structural Steel for Buildings - AISC 360.
 - 3. RCSC's "Specification for Structural Joints Using ASTM A325 or ASTM A490 Bolts."
- 1.09 DELIVERY, STORAGE, AND HANDLING
 - A. Deliver, store and handle products to/at the site under the supervision of Division 01 of this Project Manual.
 - B. Schedule deliveries of materials to the site at intervals which will ensure uninterrupted progress of the work.
 - C. Store materials to permit easy access for inspection and identification. Keep steel members off ground and spaced by using pallets, dunnage, or other supports and spacers. Protect steel members and packaged materials from corrosion and deterioration.
 - 1. Do not store materials on structure in a manner that might cause distortion, damage, or overload to members or supporting structures. Repair or replace damaged materials or structures as directed.
 - D. Store fasteners in a protected place in sealed containers with manufacturer's labels intact.
 - 1. Fasteners may be repackaged provided Owner's testing and inspecting agency observes repackaging and seals containers.
 - 2. Clean and experience. who bolts and nuts that become dry or rusty before use.
 - 3. Comply with manufacturers' written recommendations for cleaning and lubricating ASTM F1852 fasteners and for retesting fasteners after lubrication.

1.10 COORDINATION

- A. Coordinate the work under Division 01 specification of this Project Manual.
- B. Coordinate the selection of shop primers with topcoats to be applied over them. Comply with paint and coating manufacturer's recommendations to ensure that shop primers and topcoats are compatible with one another.
- C. Coordinate installation of anchorage items to be embedded in or attached to other construction without delaying the Work. Provide setting diagrams, sheet metal templates, instructions and directions for installation.
- D. Coordinate the work of this section with utility installations and all other adjacent work.
- E. Coordinate the work of this section such that general progress of the Work in not interrupted.

1.11 FIELD MEASUREMENTS

- A. Verify that field measurements are as shown on the plans and approved shop drawings.
- B. The contractor is responsible for the proper location and elevations of the work.

PART 2 - PRODUCTS

2.01 PERFORMANCE REQUIREMENTS

- A. Connections: Provide details of simple shear connections required by the Contract Documents to be selected or completed by structural-steel fabricator, including comprehensive engineering analysis by a qualified professional engineer, to withstand loads indicated and comply with other information and restrictions indicated where beam end reactions are not shown on drawings. Connection designer shall design shear connections to resist the reaction resulting from the maximum allowable uniform load of the beam found in the AISC Specification being applied along its full length.
 - 1. Select and complete connections using AISC 360.
 - 2. Use Load and Resistance Factor Design; data are given at factored-load level.
- B. Moment Connections: Type FR, fully restrained. Provide design and details of moment connections to resist forces shown on the contract drawings.
- C. Construction: Combined system of moment frame, braced frame, and shear walls.

2.02 STRUCTURAL-STEEL MATERIALS

- A. Recycled Content of Steel Products: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 25 percent.
- B. W-Shapes: ASTM A 992/A 992M.
- C. Channels, Angles, M-Shapes: ASTM A 36/A 36M.
- D. Plate and Bar: ASTM A 36/A 36M.
- E. Cold-Formed Hollow Structural Sections: ASTM A500/A500M, Grade C, seamless structural tubing.

- F. Steel Pipe: ASTM A53/A53M, Type E or Type S, Grade B.
 - 1. Weight Class: as indicated on the contract documents.
 - 2. Finish: Black except where indicated to be galvanized.
- G. Welding Electrodes: Comply with AWS requirements.

2.03 BOLTS, CONNECTORS, AND ANCHORS

- A. Zinc-Coated High-Strength Bolts, Nuts, and Washers: ASTM F3125/F3125M, Grade A 325 (ASTM A 325M), Type 1, heavy-hex steel structural bolts; ASTM A563, Grade DH (ASTM A 563M, Class 10S) heavy-hex carbon-steel nuts; and ASTM F436/F436M, Type 1, hardened carbon-steel washers.
 - 1. Finish: Hot-dip zinc coating.
 - 2. Direct-Tension Indicators: ASTM F959/F959M, Type 325 (ASTM F 959M, Type 8.8), compressible-washer type with mechanically deposited zinc coating finish.
- B. High-Strength Bolts, Nuts, and Washers: ASTM F3125/F3125M, Grade A325, Type 1, heavy-hex steel structural bolts; ASTM A 563, Grade C, heavy-hex carbon-steel nuts; and ASTM F436, Type 1, hardened carbon-steel washers; all with plain finish.
- C. High-Strength Bolts, Nuts, and Washers: ASTM F3125/F3125M, Grade A490 (A 490M), Type 1, heavy-hex steel structural bolts or tension-control, bolt-nut-washer assemblies with splined ends; ASTM A563, Grade DH, (ASTM A563M, Class 10S) heavy-hex carbon-steel nuts; and ASTM F436/F436M, Type 1, hardened carbon-steel washers with plain finish.
 - 1. Direct-Tension Indicators: ASTM F959, Type 490 (ASTM F 959M, Type 10.9), compressible-washer type with plain finish.
- D. Tension-Control, High-Strength Bolt-Nut-Washer Assemblies: ASTM F1852, Type 1, round head assemblies consisting of steel structural bolts with splined ends, heavy-hex carbon-steel nuts, and hardened carbon-steel washers.
 - 1. Finish: Plain.
- E. Shear Connectors: ASTM A108, Grades 1015 through 1020, headed-stud type, cold-finished carbon steel; AWS D1.1/D1.1M, Type B.

2.04 PRIMER

- A. Primer: Comply with Section 099113 "Exterior Painting" and Section 099123 "Interior Painting."
- B. Primer: SSPC-Paint 15, Type I, red oxide.
- C. Ensure primer is compatible with required topcoat.
- D. Galvanizing Repair Paint: ASTM A 780/A 780M.

2.05 FABRICATION

- A. Structural Steel: Fabricate and assemble in shop to greatest extent possible. Fabricate according to AISC 303, "Code of Standard Practice for Steel Buildings and Bridges," and to AISC 360.
 - 1. Camber structural-steel members where indicated.
 - 2. Fabricate beams with rolling camber up.
 - 3. Identify high-strength structural steel according to ASTM A6/A6M and maintain markings until structural steel has been erected.
 - 4. Mark and match-mark materials for field assembly.

- 5. All wide flange structural steel members shall be fabricated in accordance with ASTM A992/A992M. All miscellaneous steel members including channels, angles, S, HP, and M shapes shall be fabricated in accordance with ASTM A36/A36M.
- 6. Complete structural-steel assemblies, including welding of units, before starting shop-priming operations.
- 7. All shop connections shall be welded or high strength bolted.
- 8. Bearing surfaces shall be planed true to provide full bearing over the entire surface.
- 9. Continuously seal joined members by intermittent welds and plastic filler. Grind welds smooth where exposed or where interference with other building materials is encountered,
- 10. Splicing is not permitted unless indicated on the Contract Documents or accepted on the final approved Shop Drawings.
- B. Thermal Cutting: Perform thermal cutting by machine to greatest extent possible.
 - 1. Plane thermally cut edges to be welded to comply with requirements in AWS D1.1/D1.1M.
- C. Bolt Holes: Cut, drill, or punch standard bolt holes perpendicular to metal surfaces. Mechanically thermal cut bolt holes shall not be permitted unless prior approval by the Architect is obtained in writing.
- D. Finishing: Accurately finish ends of columns and other members transmitting bearing loads.
- E. Cleaning: Clean and prepare steel surfaces that are to remain unpainted according to SSPC-SP 2, "Hand Tool Cleaning." or SSPC-SP 3, "Power Tool Cleaning." unless a more stringent cleaning method is required for selected primers and / or other coatings.
- F. Shear Connectors: Prepare steel surfaces as recommended by manufacturer of shear connectors. Use automatic end welding of headed-stud shear connectors according to AWS D1.1/D1.1M and manufacturer's written instructions.
- G. Shop prime non-exposed steel members after fabrication in accordance with SSPC- PA. Do not prime surfaces that will be fireproofed, field welded or are in contact with concrete or high strength bolts.
- H. Paint exposed structural steel members in accordance with the applicable Division 09 Specification section.
- I. Holes: Provide holes required for securing other work to structural steel and for other work to pass through steel members.
 - 1. Cut, drill, or punch holes perpendicular to steel surfaces. Do not thermally cut bolt holes or enlarge holes by burning unless approved by the Architect in writing.
 - 2. Baseplate Holes: Cut, drill, mechanically thermal cut, or punch holes perpendicular to steel surfaces.
 - 3. Weld threaded nuts to framing and other specialty items indicated to receive other work.

2.06 SHOP CONNECTIONS

- A. High-Strength Bolts: Shop install high-strength bolts according to RCSC's "Specification for Structural Joints Using ASTM F3125/F3125M, Grade A325 or Grade A490 Bolts" for type of bolt and type of joint specified.
 - 1. Joint Type: Snug tightened unless otherwise shown on the contract documents or required by the connection designer.
- B. Weld Connections: Comply with AWS D1.1/D1.1M and AWS D1.8/D1.8M for tolerances, appearances, welding procedure specifications, weld quality, and methods used in correcting welding work.

1. Assemble and weld built-up sections by methods that maintain true alignment of axes without exceeding tolerances in AISC 303 for mill material.

2.07 SHOP PRIMING

- A. Shop prime steel surfaces except the following:
 - 1. Surfaces embedded in concrete or mortar. Extend priming of partially embedded members to a depth of 2 inches (50 mm).
 - 2. Surfaces to be field welded.
 - 3. Surfaces of high-strength bolted, slip-critical connections.
 - 4. Surfaces to receive sprayed fire-resistive materials (applied fireproofing).
 - 5. Galvanized surfaces.
- B. Surface Preparation: Clean surfaces to be painted. Remove loose rust and mill scale and spatter, slag, or flux deposits. Prepare surfaces according to the following specifications and standards:
 - 1. SSPC-SP 2, "Hand Tool Cleaning."
 - 2. SSPC-SP 3, "Power Tool Cleaning."
- C. Priming: Immediately after surface preparation, apply primer according to manufacturer's written instructions and at rate recommended by SSPC to provide a minimum dry film thickness of 1.5 mils (0.038 mm). Use priming methods that result in full coverage of joints, corners, edges, and exposed surfaces.
 - 1. Stripe paint corners, crevices, bolts, welds, and sharp edges.
 - 2. Apply two coats of shop paint to surfaces that are inaccessible after assembly or erection. Change color of second coat to distinguish it from first.

2.08 GALVANIZING

- A. Hot-Dip Galvanized Finish: Apply zinc coating by the hot-dip process to structural steel according to ASTM A123/A123M.
 - 1. Fill vent and drain holes that are exposed in the finished Work unless they function as weep holes, by plugging with zinc solder and filing off smooth.
 - 2. Galvanize lintels, shelf angles and welded door frames attached to structural-steel frame and located in exterior walls.

2.09 SOURCE QUALITY CONTROL

- A. Testing Agency: Owner will engage a qualified testing agency to perform shop tests and inspections.
 - 1. Provide testing agency with access to places where structural-steel work is being fabricated or produced to perform tests and inspections.
- B. Correct deficiencies in Work that test reports and inspections indicate does not comply with the Contract Documents.
 - 1. Inspection and Tests will not relieve the contractor of responsibility for providing materials, fabrication and erection procedures in compliance with the specified requirements. The contractor shall verify that all materials meet or exceed the requirements specified in these specifications, Contract drawings and related references. Materials not in compliance with the specified requirements will be rejected and required to be removed from the site.
- C. Bolted Connections: Inspect and test shop-bolted connections according to RCSC's "Specification for Structural Joints Using ASTM F3125/F3125M, Grade A325 or Grade A490 Bolts."

- D. Welded Connections: Visually inspect shop-welded connections according to AWS D1.1/D1.1M type required for materials being welded and the following inspection procedures, at testing agency's option:
 - 1. Liquid Penetrant Inspection: ASTM E165/E165M.
 - 2. Magnetic Particle Inspection: ASTM E709; performed on root pass and on finished weld. Cracks or zones of incomplete fusion or penetration are not accepted.
 - 3. Ultrasonic Inspection: ASTM E164.
 - 4. Radiographic Inspection: ASTM E94.
- E. In addition to visual inspection, test and inspect shop-welded shear connectors according to requirements in AWS D1.1/D1.1M for stud welding and as follows:
 - 1. Perform bend tests if visual inspections reveal either a less-than-continuous 360-degree flash or welding repairs to any shear connector.
 - 2. Conduct tests according to requirements in AWS D1.1/D1.1M on additional shear connectors if weld fracture occurs on shear connectors already tested.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Verify, with certified steel erector present, elevations of concrete- and masonry-bearing surfaces and locations of anchor rods, bearing plates, and other drawings for compliance with requirements.
 - 1. Prepare a certified survey of existing conditions. Include bearing surfaces, anchor rods, bearing plates, and other drawings showing dimensions, locations, angles, and elevations.
- B. Proceed with installation only after unsatisfactory conditions have been corrected. Commencement of installation will indicate that the erector accepts the conditions which exist.

3.02 PREPARATION

- A. Provide temporary shores, guys, braces, and other supports during erection to keep structural steel secure, plumb, and in alignment against temporary construction loads and loads equal in intensity to design loads. Remove temporary supports when permanent structural steel, connections, and bracing are in place unless otherwise indicated.
 - 1. Do not remove temporary shoring supporting composite deck construction until cast-in-place concrete has attained its design compressive strength.
 - 2. Clean bearing surfaces and other surfaces which will be in permanent contact with the work.

3.03 ERECTION

- A. Set structural steel accurately in locations and to elevations indicated and according to AISC 303 and AISC 360.
- B. Proceed with the installation only after unsatisfactory conditions have been corrected. Commencement of installation will indicate that the erector accepts the conditions which exist.
- C. Allow for erection loads and for sufficient temporary bracing to maintain structure safe, plumb and in true alignment until completion of erection and installation of permanent bracing.
- D. Coordinate placement of anchors in concrete or masonry construction for securing bearing plates.
- E. Erect all components in accordance with the approved shop drawings.

- F. Field weld components and shear studs as indicated on approved shop drawings and in accordance with AWS D1.1/D1.1M.
- G. Do not field cut or alter structural members without written approval of the Engineer.
- H. Bearing Plates and Leveling Plates: Clean concrete- and masonry-bearing surfaces of bond-reducing materials, and roughen surfaces prior to setting plates. Clean bottom surface of plates.
 - 1. Set plates for structural members on wedges, shims, or setting nuts as required.
 - 2. Weld plate washers to top of baseplate.
 - 3. Snug-tighten Pretension anchor rods after supported members have been positioned and plumbed. Do not remove wedges or shims but, if protruding, cut off flush with edge of plate before packing with grout.
 - 4. Promptly pack grout solidly between bearing surfaces and plates so no voids remain. Neatly finish exposed surfaces; protect grout and allow to cure. Comply with manufacturer's written installation instructions for shrinkage-resistant grouts.
 - 5. Coordinate placement of anchors in concrete or masonry construction for securing base plates.
- I. Maintain erection tolerances of structural steel within AISC 303, "Code of Standard Practice for Steel Buildings and Bridges."
- J. Align and adjust various members that form part of complete frame or structure before permanently fastening. Before assembly, clean bearing surfaces and other surfaces that are in permanent contact with members. Perform necessary adjustments to compensate for discrepancies in elevations and alignment.
 - 1. Level and plumb individual members of structure.
 - 2. Make allowances for difference between temperature at time of erection and mean temperature when structure is completed and in service.
- K. Splice members only where indicated.
- L. Do not use thermal cutting during erection unless approved by Architect. Finish thermally cut sections within smoothness limits in AWS D1.1/D1.1M.
- M. Do not enlarge unfair holes in members by burning or using drift pins. Ream holes that must be enlarged to admit bolts.
- N. Shear Connectors: Prepare steel surfaces as recommended by manufacturer of shear connectors. Use automatic end welding of headed-stud shear connectors according to AWS D1.1/D1.1M and manufacturer's written instructions.
- O. Erect all components in accordance with approved shop drawings. After erection, prime welds, abrasions and surfaces not shop primed or galvanized as required, except surfaces to be in contact with concrete.
- P. Field weld components and shear studs as indicated on the approved shop drawings and in accordance with AWS D1.1/D1.1M.

3.04 FIELD CONNECTIONS

A. High-Strength Bolts: Install high-strength bolts according to RCSC's "Specification for Structural Joints Using ASTM F3125/F3125M, Grade A325 or Grade A490 Bolts" for type of bolt and type of joint specified.

- 1. Joint Type: Snug tightened Pretensioned unless specifically identified as pretensioned or slip-critical on the. contract documents or calculations by the Delegated Connection designer.
- B. Weld Connections: Comply with AWS D1.1/D1.1M and AWS D1.8/D1.8M for tolerances, appearances, welding procedure specifications, weld quality, and methods used in correcting welding work.
 - 1. Comply with AISC 303 and AISC 360 for bearing, alignment, adequacy of temporary connections, and removal of paint on surfaces adjacent to field welds.
 - 2. Remove backing bars or runoff tabs where indicated, back gouge, and grind steel smooth.
 - 3. Assemble and weld built-up sections by methods that maintain true alignment of axes without exceeding tolerances in AISC 303, "Code of Standard Practice for Steel Buildings and Bridges," for mill material.
 - 4. Connections and abrasions shall be cleaned, prepared and finished in the same manner and with the same materials used in shop finishing.

3.05 FIELD QUALITY CONTROL

- A. Special Inspections: Owner will engage a qualified special inspector to perform the following special inspections:
 - 1. Verify structural-steel materials and inspect steel frame joint details.
 - 2. Verify weld materials and inspect welds.
 - 3. Verify connection materials and inspect high-strength bolted connections.
- B. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections.
- C. Bolted Connections: Inspect and test high strength bolted connections according to RCSC's "Specification for Structural Joints Using ASTM F3125/F3125M, Grade A325 or Grade A490 Bolts."
- D. Welded Connections: Visually inspect field welds according to AWS D1.1/D1.1M.
 - 1. In addition to visual inspection, test and inspect field welds according to AWS D1.1/D1.1M and the following inspection procedures, at testing agency's option:
 - a. Liquid Penetrant Inspection: ASTM E 165.
 - b. Magnetic Particle Inspection: ASTM E709; performed on root pass and on finished weld. Cracks or zones of incomplete fusion or penetration are not accepted.
 - c. Ultrasonic Inspection: ASTM E164.
 - d. Radiographic Inspection: ASTM E94.
- E. Post Installed Mechanical Anchors, Adhesive Anchors and Screw Anchors: Comply with NYS IBC Table 1704.32.
 - 1. The special inspection shall include the verification of compliance with approved construction documents and standards established by the Commissioner pursuant to Section 28-113.2.2 of the Administrative Code.
- F. In addition to visual inspection, test and inspect field-welded shear connectors according to requirements in AWS D1.1/D1.1M for stud welding and as follows:
 - 1. Perform bend tests if visual inspections reveal either a less-than-continuous 360-degree flash or welding repairs to any shear connector.
 - 2. Conduct tests according to requirements in AWS D1.1/D1.1M on additional shear connectors if weld fracture occurs on shear connectors already tested.
- G. Correct deficiencies in Work that test reports and inspections indicate does not comply with the Contract Documents.

3.06 TOLERANCES

- A. All members shall be installed within AISC tolerances and as follows:
 - 1. Maximum variation from plumb: 1/4" (6mm) per story, non-cumulative.
 - 2. Maximum offset from true alignment: 1/4" (6mm).

3.07 REPAIRS AND PROTECTION

- A. Galvanized Surfaces: Clean areas where galvanizing is damaged or missing and repair galvanizing to comply with ASTM A780/A780M.
- B. Touchup Painting: Immediately after erection, clean exposed areas where primer is damaged or missing and paint with the same material as used for shop painting to comply with SSPC-PA 1 for touching up shop-painted surfaces.
 - 1. Clean and prepare surfaces by SSPC-SP 2 hand-tool cleaning or SSPC-SP 3 power-tool cleaning.
- C. Touchup Painting: Cleaning and touchup painting are specified in Section 099100 Painting
- D. Touchup Priming: Cleaning and touchup priming as specified in Division 9 "High-Performance Coatings" or compatible primer established at the fabricators shop to be compatible with the final finish.

3.08 ADJUSTING

- A. All misfits due to errors in location, fabrication, inaccuracies in the setting of anchor bolts or other items of attachment or support shall be immediately reported to the Engineer and corrected in a manner subject to the approval of the Engineer.
- B. Submit method of correction to the Architect under Division 01 Specification provisions.
- C. Proceed with corrective work only after receiving written approval from the Architect.
- D. All corrections shall be made at no additional cost to the Owner.

END OF SECTION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. Section Includes:
 - 1. Roof deck and accessories.
 - 2. Non-composite form deck and accessories.
 - 3. Formed steel cant strips.
 - 4. Pourstop angles, cell closures and end forms to contain wet concrete.
 - 5. Bearing plates and angles
 - 6. Framing for openings up to and including 18 inches.
 - 7. Closure panels for cell voids.

1.03 ACTION SUBMITTALS

- A. Product Data: For each type of deck, accessory, and product indicated provide deck profile characteristics and dimension, structural properties and finish.
 - 1. Include a statement indicating costs for each product having recycled content.
- B. Shop Drawings:
 - 1. Include layout and types of deck panels, anchorage details, reinforcing channels, pans, cut deck openings, special jointing, accessories, and attachments to other construction. Indicate temporary shoring of decking where required. Indicate welded connections using standard AWS A2.0 welding symbols and indicate net weld lengths.

1.04 INFORMATIONAL SUBMITTALS

- A. Submit under the provisions of Section 013300.
- B. Welding certificates.
- C. Product Certificates: For each type of steel deck by product manufacturer.
- D. Manufacturer's instructions: indicate special installation sequence and special instructions required for proper installation.
- E. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, indicating that each of the following complies with requirements:
 1. Power-actuated mechanical fasteners.
- F. Research/Evaluation Reports: For steel deck.

1.05 QUALITY ASSURANCE

- A. Testing Agency Qualifications: Qualified according to ASTM E329 for testing indicated.
- B. Installer: Company specializing in performing the work of this section with a minimum of Three (3) years of documented experience.

- C. Design deck layout, spans, fastening and joints under the supervision of a Professional Structural Engineer experienced in the design of this work and licensed in the State in which the project is located.
- D. Welding Qualifications: Qualify procedures and personnel according to AWS D1.3, "Structural Welding Code Sheet Steel."
- E. Fire-Test-Response Characteristics: Where indicated, provide steel deck units identical to those tested for fire resistance per ASTM E119 by a testing and inspecting agency acceptable to authorities having jurisdiction.
- F. FM Global Listing: Provide steel roof deck evaluated by FM Global and listed in its "Approval Guide, Building Materials" for Class 1 fire rating and Class 1-90 windstorm ratings.
- G. AISI Specifications: Comply with calculated structural characteristics of steel deck according to AISI's "North American Specification for the Design of Cold-Formed Steel Structural Members."
- H. Recycled Content of Steel Products: Provide products with an average recycled content of steel products so postconsumer recycled content plus one-half of pre-consumer recycled content is not less than 25 percent.

1.06 PERFORMANCE REQUIREMENTS

- A. Metal decking design shall be in accordance with SDI Design Manual for Composite Decks, Form Decks, and Roof Decks. Substitutions shall be designed to meet or exceed published section properties of the specified materials. Section properties shall be computed in accordance with American Iron and Steel Institute Specification for the Design of Cold Formed Steel Structural Members.
- B. Lateral deflection of diaphragm shall not exceed 1/500 of the story height. Maximum vertical deflection shall not exceed L/240 of the span length.
- 1.07 DELIVERY, STORAGE, AND HANDLING
 - A. Protect steel deck from corrosion, deformation, and other damage during delivery, storage, and handling.
 - B. Cut plastic wrap to encourage ventilation.
 - C. Stack steel deck on platforms or pallets and slope to provide drainage. Protect with a waterproof covering and ventilate to avoid condensation.
 - D. Do not handle products in a manner which will distort or damage materials.
 - E. Do not store decking directly on the ground.
 - F. Store materials in a manner which will permit ease of access for inspection and identification.
 - G. Schedule delivery of the materials to the site at intervals which will ensure uninterrupted progress of the work.
 - 1. Protect and ventilate acoustical cellular roof deck with factory-installed insulation to maintain insulation free of moisture.

1.08 FIELD MEASUREMENTS

- A. Verify that field measurements are as shown on the contract drawings and approved shop drawings as required by the manufacturer.
- B. The contractor is responsible for the proper locations and elevations of the work of this section.

1.09 COORDINATION

- A. Coordinate the work under provisions of Section 013100 PROJECT MANAGEMENT AND COORDINATION.
- B. Coordinate the work of this section with utility installations and all other adjacent work.
- C. Coordinate the work such that the general progress of the work is not interrupted.

1.10 PERFORMANCE REQUIREMENTS

- A. AISI Specifications: Comply with calculated structural characteristics of steel deck according to AISI's "North American Specification for the Design of Cold-Formed Steel Structural Members."
- B. Metal decking design shall be in accordance with SDI Design Manual for Composite Decks, Form Decks, and Roof Decks. Substitutions shall be designed to meet or exceed published section properties of the specified materials. Section properties shall be computed in accordance with the American Iron and Steel Institute Specification for the Design of Cold Formed Steel Structural Members
- C. Lateral deflection of diaphragm shall not exceed 1/500th of the story height. Maximum vertical deflection shall not exceed L/240th of the span length.
- D. Fire-Resistance Ratings: Comply with ASTM E 119; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
- E. Recycled Content of Steel Products: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 25 percent.

PART 2 - PRODUCTS

2.01 METAL ROOF DECK

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Nucor Corp.; Vulcraft Division.
 - 2. Canam.
 - 3. New Millennium Building Systems.
 - 4. Substitutions shall be permitted only after receiving approval from the Architect.

2.02 NON-COMPOSITE FORM DECK

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Nucor Corp.; Vulcraft Group.
 - 2. Canam.
 - 3. New Millennium Building Systems.
 - 4. Or approved equal.

- B. Non-composite Form Deck: Fabricate ribbed-steel sheet no composite form-deck panels to comply with "SDI Specifications and Commentary for Non-composite Steel Form Deck," in SDI Publication No. 31, with the minimum section properties indicated, and with the following:
 - 1. Prime-Painted Steel Sheet: ASTM A1008/A1008M, Structural Steel (SS), Grade 80 (550) minimum, with top and underside surface shop primed with manufacturer's standard baked-on, rust-inhibitive primer.
 - a. Color: Manufacturer's standard.
 - Galvanized and Shop-Primed Steel Sheet: ASTM A653/A653M, Structural Steel (SS), Grade 80 (550), G60 (Z180) zinc coating; cleaned, pretreated, and primed with manufacturer's standard baked-on, rust-inhibitive primer.
 a. Color: Grav.
 - Profile Depth: 1-5/16 inch. or as indicated on the contract drawings.
 - 4. Design Uncoated-Steel Thickness: 24 gage, 0.0239 inch (0.61 mm).
 - 5. Span Condition: Simple span.
 - 6. Side Laps: Overlapped.

2.03 ACCESSORIES

- A. General: Provide manufacturer's standard accessory materials for deck that comply with requirements indicated.
- B. Welded Materials: AWS D1.1/D1.1M.
- C. Primer: Flexible, Rust inhibitive.
- D. Touch-up Primer: Red Oxide Type.
- E. Mechanical Fasteners: Corrosion-resistant, low-velocity, power-actuated or pneumatically driven carbon-steel fasteners; or self-drilling, self-threading screws.
- F. Side-Lap Fasteners: Corrosion-resistant, hexagonal washer head; self-drilling, carbon-steel screws, No. 10 (4.8-mm) minimum diameter.
- G. Flexible Closure Strips: Vulcanized, closed-cell, synthetic rubber. one inch thick profile to fit tight to decking in compression.
- H. Shear Connectors: 3/4 inch diameter, 4 1/2" inch long welded headed studs. locate as indicated on the contract drawings.
- I. Miscellaneous Sheet Metal Deck Accessories: Steel sheet, minimum yield strength of 33,000 psi (230 MPa), of same material, gage and finish as deck; of profile indicated or required for application.
- J. Pour Stops and Girder Fillers: Steel sheet, minimum yield strength of 33,000 psi (230 MPa), of same material and finish as deck, and of thickness and profile recommended by SDI Publication No. 31 for overhang and slab depth.
- K. Piercing Hanger Tabs: Piercing steel sheet hanger attachment devices for use with floor deck.
- L. Weld Washers: Mild steel, uncoated, 3/4 inch outside diameter, 1/8 inch thick.
- M. Recessed Sump Pans: Single-piece steel sheet, 14 gage or 0.0747 inch (1.90 mm) thick, of same material and finish as deck, with 3-inch (76-mm) wide flanges and sloped recessed side pans of 1-1/2inch (38-mm) minimum depth below deck surface. For drains, cut holes in the field.

- N. Galvanizing Repair Paint: ASTM A 780.
- O. Bearing Plates and Angles: ASTM A36 steel, unfinished.
- P. Repair Paint: Manufacturer's standard rust-inhibitive primer of same color as primer.
- Q. Closure Panels: Neoprene Blend-FR as manufactured by Carrington Specialty Products, Inc., or approved equal.
 - 1. Fire-rated Neoprene-blend formed to match profile of deck at each location.
 - 2. Install compatible backer rod and sealant to seal all edge conditions airtight.
 - 3. Physical Characteristics:
 - a. Nominal Density: 5 to 7 pcf.
 - b. Tensile Strength: 50 psi.
 - c. Elongation: 150% to break.
 - d. Compression Set: 50% of original thickness.
 - e. Compression Strength: 2 to 5 psi (at 25% deflection).
 - f. Working Temperature: -40 to 160 degrees F.
 - g. Water Absorption by Weight: 5% maximum.
 - h. Flammability: HF-1 as per UL 94.

2.04 SOURCE QUALITY CONTROL

- A. Testing and analysis of components will be performed under provisions of Section 014500.
- B. Inspection and tests will not relieve the Contractor of responsibility for providing materials and fabrication and erection procedures in compliance with specified requirements. The Contractor is to verify that all materials meet or exceed the requirements specified in these specifications.
- C. Materials not in compliance with the specified requirements will be rejected

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine supporting frame and field conditions for compliance with requirements for installation tolerances and other conditions affecting performance.
- B. Proceed with installation only after unsatisfactory conditions have been corrected. Beginning of installation means that the installer accepts the existing conditions.

3.02 INSTALLATION, GENERAL

- A. Install deck panels and accessories according to applicable specifications and commentary in SDI Publication No. 31, manufacturer's written instructions, and requirements in this Section.
- B. Install temporary shoring before placing deck panels if required to meet deflection limitations.
- C. Locate deck bundles to prevent overloading of supporting members.
- D. Clean all bearing surfaces of debris and foreign matter.
- E. Verify bearing surface is smooth and flat.
- F. Bear decking on steel supports with 1 1/2 inch (38 mm) minimum bearing.

- G. Provide decking free of amounts of lubricants or oils which would impair the adhesion of spray on fireproofing or painting.
- H. Place deck panels on supporting frame and adjust to final position with ends accurately aligned and bearing on supporting frame before being permanently fastened. Do not stretch or contract side-lap interlocks.
- I. Place deck panels flat and square and fasten to supporting frame without warp or deflection.
- J. Cut and neatly fit deck panels and accessories around openings and other work projecting through or adjacent to deck.
- K. Provide additional reinforcement and closure pieces at openings as required for strength, continuity of deck, and support of other work.
- L. Fasten deck to steel support members at ends and intermediate supports with fusion welds at 12 inches on center maximum, parallel with the deck flute and at each transverse flute. Weld washers are to be used only with decks 24 gage or thinner.
- M. Mechanically fasten male/female side laps at 24 inches on center maximum for decking thinner than 20 gage. Weld male/female side laps at 18 inches on center maximum for decks 20 gage and heavier.
- N. Reinforce steel deck openings from 6 to 18 inches (150 to 460 mm) in size with 2 inch x 2 inch x 1/4 inch (50 mm x 50 mm x 6 mm) steel angles. Place angles perpendicular to flutes; extend minimum two flutes beyond each side of opening and fusion weld to deck at each flute.
- O. Install 6 inch (150 mm) minimum wide sheet steel cover plates, of same thickness as decking, where deck changes direction. Fusion weld 12 inches (300 mm) on center maximum.
- P. Install sheet steel closures and angle flashings to close openings between deck and walls, columns and openings.
- Q. Install single row of foam flute closures above walls and partitions perpendicular to deck flutes.
- R. Comply with AWS requirements and procedures for manual shielded metal arc welding, appearance and quality of welds, and methods used for correcting welding work.
- S. Mechanical fasteners may be used in lieu of welding to fasten deck. Locate mechanical fasteners and install according to deck manufacturer's written instructions.

3.03 FLOOR-DECK INSTALLATION

- A. Fasten floor-deck panels to steel supporting members by arc spot (puddle) welds of the surface diameter indicated and as follows:
 - 1. Weld Diameter: 3/4 inch (19 mm), nominal.
 - 2. Weld Spacing: Weld edge ribs of panels at each support. Space additional welds an average of 12 inches (305 mm) apart, but not more than 18 inches (457 mm) apart.
 - 3. Weld Spacing: Space and locate welds as indicated.
- B. Side-Lap and Perimeter Edge Fastening: Fasten side laps and perimeter edges of panels between supports, at intervals not exceeding the lesser of half of the span or 36 inches (914 mm), and as follows:
 - 1. Mechanically fasten with self-drilling, No. 10 (4.8-mm-) diameter or larger, carbon-steel screws.

- 2. Fasten with a minimum of 1-1/2-inch- (38-mm-) long welds where deck is thicker than 20 gauge..
- C. End Bearing: Install deck ends over supporting frame with a minimum end bearing of 1-1/2 inches (38 mm), with end joints as follows:
 - 1. End Joints: Lapped.
- D. Pour Stops and Girder Fillers: Weld steel sheet pour stops and girder fillers to supporting structure according to SDI recommendations unless otherwise indicated. Where steel angles are not utilized, install stops at floor edge upturned to the top surface of the slab to contain wet concrete. Provide stop of sufficient strength to remain in place and stationary without distortion.
- E. Floor deck closures: Weld steel sheet column closures, cell closures, and Z-closures to deck, according to SDI recommendations, to provide tight-fitting closures at open ends of ribs and deck.
- F. Position floor drain pans with the flanges bearing on the top surface of deck. Fusion weld at each deck flute.
- G. Install piercing hanger tabs at 14 inches (355 mm) apart in both directions, within 9 inches (228 mm) of walls at ends, and not more than 12 inches (305 mm) from walls at sides unless otherwise indicated.
- H. Do not install conduit in concrete slabs.

3.04 FIELD QUALITY CONTROL

- A. Testing Agency: Engage a qualified independent testing and inspecting agency to perform field tests and inspections and prepare test reports.
- B. Field welds will be subject to inspection.
- C. Testing agency will report inspection results promptly and in writing to Contractor and Architect.
- D. Remove and replace work that does not comply with specified requirements.
- E. Additional inspecting, at Contractor's expense, will be performed to determine compliance of corrected work with specified requirements.

3.05 REPAIRS AND PROTECTION

- A. Galvanizing Repairs: Prepare and repair damaged galvanized coatings on both surfaces of deck with galvanized repair paint according to ASTM A 780 and manufacturer's written instructions.
- B. Repair Painting: Wire brush and clean rust spots, welds, and abraded areas on both surfaces of prime-painted deck immediately after installation, and apply repair paint.
- C. Provide final protection and maintain conditions to ensure that steel deck is without damage or deterioration at time of Substantial Completion.

END OF SECTION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

A. Section Includes:1. Joist framing.

1.03 ACTION SUBMITTALS

A. Product Data: For each type of cold-formed steel framing product and accessory.

B. Shop Drawings:

- 1. Include layout, spacings, sizes, thicknesses, and types of cold-formed steel framing; fabrication; and fastening and anchorage details, including mechanical fasteners.
- 2. Indicate reinforcing channels, opening framing, supplemental framing, strapping, bracing, bridging, splices, accessories, connection details, and attachment to adjoining work.
- 3. The design of the cold-formed steel framing shall be the responsibility of the contractor's fabricator. The sizes (depth) of the steel studs shall be as shown on the contract drawings. Unless specifically indicated on the construction documents, it shall be the responsibility of the design engineer to size the spacing and gauge of the element as well as the total depth of the member in the case of header and sill design.
- 4. For cold-formed metal framing indicated to comply with design loads, include structural analysis data signed and sealed by the qualified professional engineer responsible for their preparation.
- 5. The contractor's fabricator shall provide a full set of engineering calculations as well as a complete set of shop drawings affixed with a New York State Professional Engineer's sign and seal. The design of the cold-formed steel elements shall be in conformance with the information shown on the contract documents and shall be in accordance with the Building Code of New York State 2020 IBC with applicable supplements.

1.04 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For testing agency.
- B. Welding certificates.
- C. Product Test Reports: From a qualified testing agency, unless otherwise stated, indicating that each of the following complies with requirements, based on evaluation of comprehensive tests for current products:
 - 1. Steel sheet.
 - 2. Expansion anchors.
 - 3. Power-actuated anchors.
 - 4. Mechanical fasteners.
 - 5. Vertical deflection clips.
 - 6. Horizontal drift deflection clips
 - 7. Miscellaneous structural clips and accessories.
- D. Research Reports: For non-standard cold-formed steel framing, from ICC-ES.

1.05 QUALITY ASSURANCE

- A. Testing Agency Qualifications: An independent testing agency, acceptable to authorities having jurisdiction, qualified according to ASTM E329 to conduct the testing indicated.
- B. Product Tests: Mill certificates or data from a qualified independent testing agency, or in-house testing with calibrated test equipment indicating steel sheet complies with requirements, including base-metal thickness, yield strength, tensile strength, total elongation, chemical requirements, and metallic-coating thickness.
- C. Welding Qualifications: Qualify procedures and personnel according to the following:
 - 1. AWS D1.1/D1.1M, "Structural Welding Code Steel."
 - 2. AWS D1.3/D1.3M, "Structural Welding Code Sheet Steel."
- D. Fire-Test-Response Characteristics: Where indicated, provide cold-formed metal framing identical to that of assemblies tested for fire resistance per ASTM E119 by a testing and inspecting agency acceptable to authorities having jurisdiction.
- E. AISI Specifications and Standards: Comply with AISI's "North American Specification for the Design of Cold-Formed Steel Structural Members" and its "Standard for Cold-Formed Steel Framing - General Provisions."

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Protect cold-formed steel framing from corrosion, moisture staining, deformation, and other damage during delivery, storage, and handling.
- B. Store cold-formed metal framing, protect with a waterproof covering, and ventilate to avoid condensation.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 1. <u>Dietrich Metal Framing</u> ; a Worthington Industries Company
 - 2. <u>MarinoWARE</u>
 - 3. Or approved equal.

2.02 PERFORMANCE REQUIREMENTS

- A. Structural Performance: Provide cold-formed steel framing capable of withstanding design loads within limits and under conditions indicated.
 - 1. Deflection Limits: Design framing systems to withstand design loads without deflections greater than the following:
 - a. Interior Load-Bearing Wall Framing: Horizontal deflection of 1/360 of the wall height under a horizontal load of 5 lbf/sq. ft.

2.03 COLD-FORMED STEEL FRAMING, GENERAL

A. Recycled Content of Steel Products: Provide products with an average recycled content of steel products so postconsumer recycled content plus one-half of pre-consumer recycled content is not less than 25 percent.

- B. All studs and/or joists and accessories shall be the type, size, gage, and spacing shown on the plans. Studs, runners (track) bracing, and bridging shall be manufactured per ASTM C955.
- C. All galvanized studs, joists, and accessories shall be formed from steel that conforms to the requirements of ASTM A653/A653M, as set forth in Section 1.02 of the AISI specification for design of cold-formed steel structural members.
- D. All galvanized studs joists and accessories shall have a minimum G-60 coating.
- E. Minimum steel gauges shall be 18 ga. for all structural elements subject to gravity and/or lateral wind forces.
- F. Minimum steel gauge for interior elements subject to partition loadings shall be 20 ga..
- G. All section properties shall be calculated in accordance with the AISI specification for the design of cold-formed steel structural members (latest edition).
- H. Facing materials may not be substituted for bridging. Horizontal bridging must be installed prior to loading the wall and/or floor/roof joists.
- I. The physical and structural properties published by approved supplier will be accepted; otherwise these properties must be substantiated by calculations for loading stresses and deflections of the designed framing sealed by a professional engineer licensed in the State of New York.
- J. Prior to fabrication submit fabrication and erection drawings for review and approval by the architect/ engineer. Indicate component details, framing for openings, bearing anchorage, temporary bracing, welds or type and location of mechanical fasteners and accessories or items required of other work for complete installations. Included manufacturer's instructions for securing studs to tracks and for other framing connections.

2.04 FRAMING ACCESSORIES

- A. Fabricate steel-framing accessories from steel sheet, ASTM A 1003/A 1003M, Structural Grade, Type H, metallic coated, of same grade and coating weight used for framing members.
- B. Provide accessories of manufacturer's standard thickness and configuration, unless otherwise indicated, as follows:
 - 1. Supplementary framing.
 - 2. Bracing, bridging, and solid blocking.
 - Web stiffeners.
 - 4. Anchor clips.
 - 5. End clips.
 - 6. Stud kickers and knee braces.
 - 7. Hole reinforcing plates.
 - 8. Backer plates.

2.05 ANCHORS, CLIPS, AND FASTENERS

- A. Steel Shapes and Clips: ASTM A36/A36M, zinc coated by hot-dip process according to ASTM A123/A123M.
- B. Anchor Bolts: ASTM F1554, Grade 36, threaded carbon-steel hex-headed bolts and carbon-steel nuts; and flat, hardened-steel washers; zinc coated by hot-dip process according to ASTM A153/A153M, Class C.

- C. Expansion Anchors: Fabricated from corrosion-resistant materials, with allowable load or strength design capacities calculated according to ICC-ES AC193 and ACI 318 greater than or equal to the design load, as determined by testing per ASTM E488/E488M conducted by a qualified testing agency.
- D. Power-Actuated Anchors: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with allowable load capacities calculated according to ICC-ES AC70, greater than or equal to the design load, as determined by testing per ASTM E 1190 conducted by a qualified testing agency.
- E. Mechanical Fasteners: ASTM C 1513, corrosion-resistant-coated, self-drilling, self-tapping, steel drill screws.
 - 1. Head Type: Low-profile head beneath sheathing, manufacturer's standard elsewhere.
- F. Welding Electrodes: Comply with AWS standards.
- G. Column Flange Grip Clips: Pre-manufactured Column/Beam connectors for rapid installation of board type materials to Steel Column and Beam Flanges. ASTM A1003 A1003/A1003M Structural Grade 33 (230) Type H, ST33H (ST230H): 33ksi (230MPa) minimum yield strength, 45ksi (310MPa) minimum tensile strength, 27mil minimum thickness (22 gauge, 0.0283" design thickness) with ASTM A653/A653M G60 (Z180) hot dipped galvanized coating. Manufacturer: The steel Network, Inc. Unit connection box measures 1 inch deep, 2 inches wide and 2 1/2 inches long with a spring clip depth of 2.375 inches and a curved clip spring clearance of .2 inches.
 - 1. Install as indicated on the drawings. Maximum spacing 24" on center.

2.06 MISCELLANEOUS MATERIALS

- A. Galvanizing Repair Paint: ASTM A780/A780M.
- B. Nonmetallic, Non-shrink Grout: Premixed, nonmetallic, noncorrosive, nonstaining grout containing selected silica sands, Portland cement, shrinkage-compensating agents, and plasticizing and water-reducing agents, complying with ASTM C1107/C1107M, with fluid consistency and 30-minute working time.
- C. Shims: Load bearing, high-density multimonomer plastic, and non-leaching; or of cold-formed steel of same grade and coating as framing members supported by shims.
- D. Sealer Gaskets: Closed-cell neoprene foam, 1/4 inch thick, selected from manufacturer's standard widths to match width of bottom track or rim track members.

2.07 FABRICATION

- A. Fabricate cold-formed steel framing and accessories plumb, square, and true to line, and with connections securely fastened, according to referenced AISI's specifications and standards, manufacturer's written instructions, and requirements in this Section.
 - 1. Fabricate framing assemblies using jigs or templates.
 - 2. Cut framing members by sawing or shearing; do not torch cut.
 - 3. Fasten cold-formed steel framing members by welding, screw fastening, clinch fastening, pneumatic pin fastening, or riveting as standard with fabricator. Wire tying of framing members is not permitted.
 - a. Comply with AWS D1.3/D1.3M requirements and procedures for welding, appearance and quality of welds, and methods used in correcting welding work.
 - b. Locate mechanical fasteners and install according to Shop Drawings, with screw penetrating joined members by no fewer than three exposed screw threads.

- 4. Fasten other materials to cold-formed steel framing by welding, bolting, pneumatic pin fastening, or screw fastening, according to Shop Drawings.
- B. Reinforce, stiffen, and brace framing assemblies to withstand handling, delivery, and erection stresses. Lift fabricated assemblies to prevent damage or permanent distortion.
- C. Fabrication Tolerances: Fabricate assemblies level, plumb, and true to line to a maximum allowable tolerance variation of 1/8 inch in 10 feet and as follows:
 - 1. Spacing: Space individual framing members no more than plus or minus 1/8 inch from plan location. Cumulative error shall not exceed minimum fastening requirements of sheathing or other finishing materials.
 - 2. Squareness: Fabricate each cold-formed steel framing assembly to a maximum out-of-square tolerance of 1/8 inch.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine supporting substrates and abutting structural framing for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

- A. Before sprayed fire-resistive materials are applied, attach continuous angles, supplementary framing, or tracks to structural members indicated to receive sprayed fire-resistive materials.
- B. Install sealer gaskets at the underside of wall bottom track or rim track and at the top of foundation wall or slab at stud or joist locations.

3.03 INSTALLATION, GENERAL

- A. Cold-formed steel framing may be shop or field fabricated for installation, or it may be field assembled.
- B. Install cold-formed steel framing according to AISI S200 and to manufacturer's written instructions unless more stringent requirements are indicated.
- C. Install cold-formed steel framing and accessories plumb, square, and true to line, and with connections securely fastened.
 - 1. Cut framing members by sawing or shearing; do not torch cut.
 - 2. Fasten cold-formed steel framing members by welding, screw fastening, clinch fastening, or riveting. Wire tying of framing members is not permitted.
 - a. Comply with AWS D1.3/D1.3M requirements and procedures for welding, appearance and quality of welds, and methods used in correcting welding work. Welds may be butt, fillet, spot or groove type. The appropriateness of which shall be determined by and within the design calculations. All welds shall be touched-up using zinc -rich paint to galvanized members and paint similar to that used by the manufacturer for painted members.
 - b. Locate mechanical fasteners and install according to Shop Drawings, and complying with requirements for spacing, edge distances, and screw penetration.
- D. Install framing members in one-piece lengths unless splice connections are indicated for track or tension members.

- E. Install temporary bracing and supports to secure framing and support loads comparable in intensity to those for which structure was designed. Maintain braces and supports in place, undisturbed, until entire integrated supporting structure has been completed and permanent connections to framing are secured.
- F. Do not bridge building expansion joints with cold-formed steel framing. Independently frame both sides of joints.
- G. Install insulation, specified in Section 072100 ASPHALT SHINGLES in built-up exterior framing members, such as headers, sills, boxed joists, and multiple studs at openings, that are inaccessible on completion of framing work.
- H. Fasten hole reinforcing plate over web penetrations that exceed size of manufacturer's approved or standard punched openings.
- I. Erection Tolerances: Install cold-formed steel framing level, plumb, and true to line to a maximum allowable tolerance variation of 1/8 inch in 10 feet and as follows:
 - 1. Space individual framing members no more than plus or minus 1/8 inch from plan location. Cumulative error shall not exceed minimum fastening requirements of sheathing or other finishing materials.
- J. Wire tying in structural applications is not permitted.

3.04 LOAD-BEARING WALL INSTALLATION

- A. Install continuous top and bottom tracks sized to match studs. Align tracks accurately and securely anchor at corners and ends, and at spacings as follows:
 - 1. Anchor Spacing: To match stud spacing.

3.05 EXTERIOR NON-LOAD-BEARING WALL INSTALLATION

- A. Install continuous tracks sized to match studs. Align tracks accurately and securely anchor to supporting structure as indicated.
- B. Fasten both flanges of studs to top and bottom track unless otherwise indicated. Space studs as follows:
 - 1. Stud Spacing: 16 inches unless indicated otherwise.
- C. Set studs plumb, except as needed for diagonal bracing or required for non-plumb walls or warped surfaces and similar requirements.
- D. Isolate non-load-bearing steel framing from building structure to prevent transfer of vertical loads while providing lateral support.
 - 1. Install single-leg deflection tracks and anchor to building structure.
 - 2. Install double deep-leg deflection tracks and anchor outer track to building structure.
 - 3. Connect vertical deflection clips to infill studs and anchor to building structure.
 - 4. Connect drift clips to cold formed metal framing and anchor to building structure
- E. Install horizontal bridging in wall studs, spaced vertically in rows indicated on Shop Drawings but not more than 48 inches apart. Fasten at each stud intersection.
 - Top Bridging for Single Deflection Track: Install row of horizontal bridging within 12 inches of single deflection track. Install a combination of flat, taut, steel sheet straps of width and thickness indicated and stud or stud-track solid blocking of width and thickness matching studs. Fasten flat straps to stud flanges and secure solid blocking to stud webs or flanges.
 a. Install solid blocking at centers indicated on Shop Drawings.

- 2. Bridging: Cold-rolled steel channel, welded or mechanically fastened to webs of punched studs.
- F. Install miscellaneous framing and connections, including stud kickers, web stiffeners, clip angles, continuous angles, anchors, and fasteners, to provide a complete and stable wall-framing system.

3.06 FIELD QUALITY CONTROL

- A. Testing: Owner will engage a qualified independent testing and inspecting agency to perform field tests and inspections and prepare test reports.
- B. Field and shop welds will be subject to testing and inspecting.
- C. All members shall be checked for proper alignment, bearing, completeness of attachments, proper placement and reinforcing.
- D. Testing agency will report test results promptly and in writing to Contractor and Architect.
- E. Remove and replace work where test results indicate that it does not comply with specified requirements.
- F. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

3.07 REPAIRS AND PROTECTION

- A. Galvanizing Repairs: Prepare and repair damaged galvanized coatings on fabricated and installed cold-formed steel framing with galvanized repair paint according to ASTM A 780 and manufacturer's written instructions.
- B. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and installer that ensure that cold-formed steel framing is without damage or deterioration at time of Substantial Completion.

3.08 TOLERANCES

- A. Vertical alignment (plumbness) of studs shall be within 1/8 inch in 10.0 inches (3.175 mm in 3.048 m) of the span.
- B. Horizontal alignment (levelness) of walls shall be within 1/8 inch in 10.0 inches of their respective lengths.
- C. Spacing of studs shall not be more than +1/8 inch from the designed spacing providing that the cumulative error does not exceed the requirements of the finishing materials.

END OF SECTION

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Stairs with grating treads.
- B. Prefabricated stairs.
- C. Structural steel stair framing and supports.
- D. Handrails and guards.

1.02 RELATED REQUIREMENTS

- A. Section 055000 Metal Fabrications.
- B. Section 055213 Pipe and Tube Railings: Metal handrails for the stairs specified in this section.
- C. Section 099123 Interior Painting: Paint finish.

1.03 REFERENCE STANDARDS

- A. AISC 201 AISC Certification Program for Structural Steel Fabricators, Standard for Steel Building Structures; 2006.
- B. ASTM A6/A6M Standard Specification for General Requirements for Rolled Structural Steel Bars, Plates, Shapes, and Sheet Piling; 2019.
- C. ASTM A36/A36M Standard Specification for Carbon Structural Steel; 2014.
- D. ASTM A53/A53M Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless; 2018.
- E. ASTM A283/A283M Standard Specification for Low and Intermediate Tensile Strength Carbon Steel Plates; 2018.
- F. ASTM A500/A500M Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes; 2018.
- G. ASTM A501/A501M Standard Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing; 2014.
- H. ASTM A786/A786M Standard Specification for Hot-Rolled Carbon, Low-Alloy, High-Strength Low-Alloy, and Alloy Steel Floor Plates; 2015.
- I. AWS A2.4 Standard Symbols for Welding, Brazing, and Nondestructive Examination; 2012.
- J. AWS D1.1/D1.1M Structural Welding Code Steel; 2015, with Errata (2016).
- K. IAS AC172 Accreditation Criteria for Fabricator Inspection Programs for Structural Steel; 2018.
- L. NAAMM AMP 510 Metal Stairs Manual; 1992.
- M. NAAMM MBG 531 Metal Bar Grating Manual; 2017.
- N. NAAMM MBG 532 Heavy Duty Metal Bar Grating Manual; 2009.

1.04 SUBMITTALS

- A. See Section 013000 Administrative Requirements, for submittal procedures.
- B. Shop Drawings: Indicate profiles, sizes, connection attachments, reinforcing, anchorage, size and type of fasteners, and accessories.

1.05 QUALITY ASSURANCE

- A. Fabricator Qualifications:
 - 1. A qualified steel fabricator that is certified by the American Institute for Steel Construction (AISC) under AISC 201.
 - 2. A qualified steel fabricator that is accredited by the International Accreditation Service (IAS) Fabricator Inspection Program for Structural Steel in accordance with IAS AC172.

PART 2 PRODUCTS

- 2.01 METAL STAIRS GENERAL
 - A. Metal Stairs: Provide stairs of the design specified, complete with landing platforms, vertical and horizontal supports, railings, and guards, fabricated accurately for anchorage to each other and to building structure.
 - 1. Regulatory Requirements: Provide stairs and railings that comply with most stringent requirements of local, state, and federal regulations; where requirements of Contract Documents exceed those of regulations, comply with Contract Documents.
 - 2. Structural Design: Provide complete stair and railing assemblies that comply with the applicable local code.
 - 3. Dimensions: As indicated on drawings.
 - 4. Shop assemble components; disassemble into largest practical sections suitable for transport and access to site.
 - 5. No sharp or rough areas on exposed travel surfaces and surfaces accessible to touch.
 - 6. Separate dissimilar metals using paint or permanent tape.
 - B. Fasteners: Same material or compatible with materials being fastened; type consistent with design and specified quality level.
 - C. Anchors and Related Components: Same material and finish as item to be anchored, except where specifically indicated otherwise; provide all anchors and fasteners required.

2.02 METAL STAIRS WITH GRATING TREADS

- A. Jointing and Finish Quality Level: Industrial, as defined above.
- B. Risers: Open.
- C. Treads: Steel bar grating.
 - 1. Grating Type: Welded.
 - 2. Bearing Bar Depth: 3/4 inch (19 mm), minimum.
 - 3. Top Surface: Standard.
 - 4. Nosing: Checkered plate.
 - 5. Nosing Width: 1-1/4 inch (32 mm), minimum.
 - 6. Anchorage to Stringers: End plates welded to grating, bolted to stringers.
- D. Stringers: Rolled steel channels.
 - 1. Stringer Depth: 12 inches (305 mm).

- 2. End Closure: Sheet steel, 14 gage, 0.075 inch (1.9 mm) minimum; welded across ends.
- E. Finish: Shop- or factory-prime painted.

2.03 PREFABRICATED STAIRS

- A. Prefabricated Egress Stairs: Welded unit, factory fabricated to greatest degree practical and in the largest components possible.
 - 1. Design Requirements: Comply with structural design criteria stated elsewhere in this section and applicable local code.
 - 2. Materials: Manufacturer's standard steel tubes, plates, bars, shapes, sheets, wire and mesh that comply with requirements of MATERIALS article of this section.
 - a. Rails: Manufacturer's standard rails.
 - 1) Guardrails: 42 inches (1067 mm) high.
 - 2) Handrails: 30 inches (762 mm) to 38 inches (965 mm) high.
 - 3. Manufacturers:
 - a. Lapeyre Stair, Inc; 10AA: www.lapeyrestair.com/#sle.
 - b. Precision Ladders, LLC; Fixed Aluminum Industrial Stairway: www.precisionladders.com/#sle.

2.04 HANDRAILS AND GUARDS

- A. Wall-Mounted Rails: See Section 055213.
- B. Guards: Pipe railings, see Section 055213.

2.05 MATERIALS

- A. Steel Sections: ASTM A36/A36M.
- B. Steel Tubing: ASTM A500/A500M or ASTM A501/A501M structural tubing, round and shapes as indicated.
- C. Steel Plates: ASTM A6/A6M or ASTM A283/A283M.
- D. Pipe: ASTM A53/A53M, Grade B Schedule 40, black finish.
- E. Checkered Plate: ASTM A786/A786M, rolled steel floor plate; manufacturer's standard pattern.
- F. Perforated Plate:
- G. Gratings: Bar gratings that comply with NAAMM MBG 531 or NAAMM MBG 532, whichever applies based on bar sizes.
- 2.06 SHOP FINISHING
 - A. Clean surfaces of rust, scale, grease, and foreign matter prior to finishing.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install components plumb and level, accurately fitted, free from distortion or defects.
- B. Allow for erection loads, and for sufficient temporary bracing to maintain true alignment until completion of erection and installation of permanent attachments.

- C. Provide welded field joints where specifically indicated on drawings. Perform field welding in accordance with AWS D1.1/D1.1M.
- D. Other field joints may be either welded or bolted provided the result complies with the limitations specified for jointing quality levels.
- E. Obtain approval prior to site cutting or creating adjustments not scheduled.
- F. After erection, prime welds, abrasions, and surfaces not shop primed or galvanized, except surfaces to be in contact with concrete.

END OF SECTION

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Stair railings and guardrails.
- B. Balcony railings and guardrails.

1.02 RELATED REQUIREMENTS

- A. Section 055100 Metal Stairs: Handrails other than those specified in this section.
- B. Section 055100 Metal Stairs: Attachment plates for handrails specified in this section.
- C. Section 099123 Interior Painting: Paint finish.

1.03 REFERENCE STANDARDS

- A. AISC 201 AISC Certification Program for Structural Steel Fabricators, Standard for Steel Building Structures; 2006.
- B. ASTM A53/A53M Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless; 2018.
- C. ASTM A500/A500M Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes; 2018.
- D. ASTM E935 Standard Test Methods for Performance of Permanent Metal Railing Systems and Rails for Buildings; 2013, with Editorial Revision.
- E. IAS AC172 Accreditation Criteria for Fabricator Inspection Programs for Structural Steel; 2018.

1.04 SUBMITTALS

- A. See Section 013000 Administrative Requirements, for submittal procedures.
- B. Shop Drawings: Indicate profiles, sizes, connection attachments, anchorage, size and type of fasteners, and accessories.

1.05 QUALITY ASSURANCE

- A. Structural Designer Qualifications: Professional Structural Engineer experienced in design of this work and licensed in New York, or personnel under direct supervision of such an engineer.
- B. Fabricator Qualifications:
 - 1. A qualified steel fabricator that is certified by the American Institute for Steel Construction (AISC) under AISC 201.
 - 2. A qualified steel fabricator that is accredited by the International Accreditation Service (IAS) Fabricator Inspection Program for Structural Steel in accordance with IAS AC172.
 - 3. A company specializing in manufacturing products specified in this section, with not less than ten years of documented experience.

PART 2 PRODUCTS

2.01 RAILINGS - GENERAL REQUIREMENTS

- A. Design, fabricate, and test railing assemblies in accordance with the most stringent requirements of applicable local code.
- B. Distributed Loads: Design railing assembly, wall rails, and attachments to resist distributed force of 75 pounds per linear foot (1095 N/m) applied to the top of the assembly and in any direction, without damage or permanent set. Test in accordance with ASTM E935.
- C. Concentrated Loads: Design railing assembly, wall rails, and attachments to resist a concentrated force of 200 pounds (890 N) applied at any point on the top of the assembly and in any direction, without damage or permanent set. Test in accordance with ASTM E935.
- D. Allow for expansion and contraction of members and building movement without damage to connections or members.
- E. Dimensions: See drawings for configurations and heights.
- F. Provide anchors and other components as required to attach to structure, made of same materials as railing components unless otherwise indicated; where exposed fasteners are unavoidable provide flush countersunk fasteners.
- G. Provide slip-on non-weld mechanical fittings to join lengths, seal open ends, and conceal exposed mounting bolts and nuts, including but not limited to elbows, T-shapes, splice connectors, flanges, escutcheons, and wall brackets.

2.02 STEEL RAILING SYSTEM

- A. Steel Tube: ASTM A500/A500M, Grade B cold-formed structural tubing.
- B. Steel Pipe: ASTM A53/A53M, Grade B Schedule 80, black finish.
- C. Non-Weld Mechanical Fittings: Slip-on, galvanized malleable iron castings, for Schedule 40 pipe, with flush setscrews for tightening by standard hex wrench, no bolts or screw fasteners.
- D. Exposed Fasteners: No exposed bolts or screws.

2.03 FABRICATION

- A. Accurately form components to suit specific project conditions and for proper connection to building structure.
- B. Fit and shop assemble components in largest practical sizes for delivery to site.
- C. Fabricate components with joints tightly fitted and secured. Provide spigots and sleeves to accommodate site assembly and installation.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field conditions are acceptable and are ready to receive work.

3.02 PREPARATION

A. Apply one coat of bituminous paint to concealed aluminum surfaces that will be in contact with cementitious or dissimilar materials.

3.03 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Install components plumb and level, accurately fitted, free from distortion or defects, with tight joints.
- C. Anchor railings securely to structure.

END OF SECTION

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes:
 - 1. Prefabricated egress barrier gates for stairwells.

1.02 REFERENCES

- A. American Welding Society (AWS) D1.1/D1.1M Structural Welding Code Steel.
- B. ASTM International (ASTM):
 - 1. A36/A36M Standard Specification for Carbon Structural Steel.
 - 2. E2072 Standard Specification for Photoluminescent (Phosphorescent) Safety Markings.
- C. International Code Council (ICC):
 - 1. International Building Code (IBC).

1.03 SUBMITTALS

- A. Action Submittals:
 - 1. Product Data: Manufacturer's descriptive data including dimensions, materials, finishes, and mounting details.
- B. Informational Submittals:
 - 1. Certificates of Compliance: Show product compliance with reference standards.
- C. Closeout Submittals:
 - 1. Maintenance Data: Include recommendations for sign cleaning and routine maintenance.

1.04 QUALITY ASSURANCE

A. Provide "No Exit" signs in accordance with NFPA 101.

1.05 DELIVERY, STORAGE AND HANDLING

- A. Store signs in cool, dry location in original packaging until installed.
- B. Store gates above ground on platforms, skids, or other supports; separate with wooden separators.
- C. Protect steel from corrosion.
- D. Prevent damage to prime coat.

PART 2 PRODUCTS

- 2.01 MANUFACTURERS
 - A. Contract Documents are based on products by EgressGate <u>www.eggressgate.com.</u>
 - B. Substitutions: [Under provisions of Division 01.]

2.02 MATERIALS

A. Steel Shapes, Tube, Pipe, and Plate: ASTM A36/A36M.

- B. Hinges: Self-closing type, single acting, of sufficient spring power to completely close gate without excessive noise upon impacting strike plate.
- C. Photoluminescent Sign Luminance Properties: ASTM E2072 and UL 1994.

2.03 MANUFACTURED UNITS

- A. Metal Egress Barrier Gates:
 - 1. Comply with requirements of IBC and NFPA 101.
 - 2. 90 to 180 degree opening.
 - 3. Self-closing and self-stopping.
 - 4. Reversible swing direction.
 - 5. Universal mounting.
 - 6. Width: Adjustable to fit openings up to 60 inches.
 - 7. Height: 32 inches.
- B. "No Exit" Signs:
 - 1. Description: Non-flexible photoluminescent sign with black markings.
 - 2. Size: 12 x 9 inches.

2.04 FABRICATION

- A. Shop assemble gates, ready for delivery to site.
- B. Fabricate with joints tightly fitted and secured.
- C. Equip each gate with:
 - 1. Universal mounting.
 - 2. Two hinges.
 - 3. Steel stop plate welded to gate, with slotted bolt holes for adjustment.
 - 4. Steel sign plate with photoluminescent "No Exit" sign welded to gate.

2.05 FINISHES

A. Ferrous Metal: Shop painted with one coat red oxide primer paint.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install gates in accordance with manufacturer's instructions.
- B. Weld anchor plates to mounting bars if required based on adjacent construction.
- C. Weld stop plate to gates.
- D. Extend gates to required width, then weld expansion joints on top and bottom tubes.
- E. Apply photomuminescent "No Exit" Sign to sign plate.

3.02 ADJUSTING

A. Clean and touch up damaged primer paint with same product as applied in shop.

END OF SECTION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. Section Includes:
 - 1. Silicone joint sealants.
 - 2. Polyurethane joint sealants.
 - 3. Latex joint sealants.
 - 4. Preformed joint sealants.
 - 5. Acoustical joint sealants.

1.03 PRECONSTRUCTION TESTING

- A. Preconstruction Compatibility and Adhesion Testing: Submit to joint-sealant manufacturers, for testing indicated below, samples of materials that will contact or affect joint sealants.
 - 1. Use ASTM C1087 to determine whether priming and other specific joint preparation techniques are required to obtain rapid, optimum adhesion of joint sealants to joint substrates.
 - 2. Samples for Verification: For each type of sealant submit a color sample board and one sample joint, 1/2" wide by 6" long including joint substrates, shims, joint-sealant backings, secondary seals, and miscellaneous materials.
 - 3. Schedule sufficient time for testing and analyzing results to prevent delaying the Work.
 - 4. For materials failing tests, obtain joint-sealant manufacturer's written instructions for corrective measures including use of specially formulated primers.
 - 5. Testing will not be required if joint-sealant manufacturers submit joint preparation data that are based on previous testing, not older than 24 months, of sealant products for adhesion to, and compatibility with, joint substrates and other materials matching those submitted.

1.04 ACTION SUBMITTALS

- A. See Section 013300 SUBMITTALS, for Submittal Procedures.
- B. Product Data: For each joint-sealant product indicated.
- C. Samples for Initial Selection: Manufacturer's color charts consisting of strips of cured sealants showing the full range of colors available for each product exposed to view.
- D. Joint-Sealant Schedule: Include the following information:
 - 1. Joint-sealant application, joint location, and designation.
 - 2. Joint-sealant manufacturer and product name.
 - 3. Joint-sealant formulation.
 - 4. Joint-sealant color.

1.05 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For qualified Installer and testing agency.
- B. Product Certificates: For each kind of joint sealant and accessory, from manufacturer.
- C. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, indicating that sealants comply with requirements.

- D. Preconstruction Compatibility and Adhesion Test Reports: From sealant manufacturer, indicating the following:
 - 1. Materials forming joint substrates and joint-sealant backings have been tested for compatibility and adhesion with joint sealants.
 - 2. Interpretation of test results and written recommendations for primers and substrate preparation needed for adhesion.
- E. Warranties: Sample of special warranties.

1.06 QUALITY ASSURANCE

- A. Installer Qualifications: Manufacturer's authorized representative who is trained and approved for installation of units required for this Project with a minimum of three-years experience in the installation of the work of this section.
- B. Source Limitations: Obtain each kind of joint sealant from single source from single manufacturer.
- C. Product Testing: Test joint sealants using a qualified testing agency.
 - 1. Testing Agency Qualifications: An independent testing agency qualified according to ASTM C1021 to conduct the testing indicated.
 - 2. Test according to SWRI's Sealant Validation Program for compliance with requirements specified by reference to ASTM C920 for adhesion and cohesion under cyclic movement, adhesion-in-peel, and indentation hardness.
- D. Mockups: Install sealant in mockups of assemblies specified in other Sections that are indicated to receive joint sealants specified in this Section. Use materials and installation methods specified in this Section.

1.07 PROJECT CONDITIONS

- A. Do not proceed with installation of joint sealants under the following conditions:
 - 1. When ambient and substrate temperature conditions are outside limits permitted by joint-sealant manufacturer or are below 40 degrees F.
 - 2. When joint substrates are wet.
 - 3. Where joint widths are less than those allowed by joint-sealant manufacturer for applications indicated.
 - 4. Where contaminants capable of interfering with adhesion have not yet been removed from joint substrates.

1.08 WARRANTY

- A. Special Installer's Warranty: Manufacturer's standard form in which Installer agrees to repair or replace joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.
 - 1. Warranty Period: Two years from date of Substantial Completion.
- B. Special Manufacturer's Warranty: Manufacturer's standard form in which joint-sealant manufacturer agrees to furnish joint sealants to repair or replace those that do not comply with performance and other requirements specified in this Section within specified warranty period.
 1. Warranty Period: Two years from date of Substantial Completion.
- C. Special warranties specified in this article exclude deterioration or failure of joint sealants from the following:

- 1. Movement of the structure caused by structural settlement or errors attributable to design or construction resulting in stresses on the sealant exceeding sealant manufacturer's written specifications for sealant elongation and compression.
- 2. Disintegration of joint substrates from natural causes exceeding design specifications.
- 3. Mechanical damage caused by individuals, tools, or other outside agents.
- 4. Changes in sealant appearance caused by accumulation of dirt or other atmospheric contaminants.

PART 2 - PRODUCTS

2.01 MATERIALS, GENERAL

- A. Compatibility: Provide joint sealants, backings, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by joint-sealant manufacturer, based on testing and field experience.
- B. VOC Content of Interior Sealants: Sealants and sealant primers used inside the weatherproofing system shall comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):
 - 1. Architectural Sealants:
 250 g/L.

 2. Sealant Drimere for Nonnersus Substrates:
 250 g/L.
 - 2. Sealant Primers for Nonporous Substrates: 250 g/L.
 - 3. Sealant Primers for Porous Substrates: 775 g/L.
- C. Liquid-Applied Joint Sealants: Comply with ASTM C920 and other requirements indicated for each liquid-applied joint sealant specified, including those referencing ASTM C920 classifications for type, grade, class, and uses related to exposure and joint substrates.
 - 1. Suitability for Immersion in Liquids. Where sealants are indicated for Use I for joints that will be continuously immersed in liquids, provide products that have undergone testing according to ASTM C 1247. Liquid used for testing sealants is deionized water, unless otherwise indicated.
- D. Stain-Test-Response Characteristics: Where sealants are specified to be non-staining to porous substrates, provide products that have undergone testing according to ASTM C1248 and have not stained porous joint substrates indicated for Project.
- E. Suitability for Contact with Food: Where sealants are indicated for joints that will come in repeated contact with food, provide products that comply with 21 CFR 177.2600.
- F. Colors of Exposed Joint Sealants: As selected by Architect from manufacturer's full color range.
- G. Sealant Abbreviations:
 - 1. Use NT = Non-Traffic
 - 2. Use T = Traffic
 - 3. LM = Low Modulus
 - 4. Type S = Single Component
 - 5. Type M = Multi-component
 - 6. Grade NS = Non-Sag
 - 7. Grade P = Pourable
 - 8. Grade SL = Self-Leveling
 - 9. Use (related to Material)
 - 10. Use M = Mortar Contact
 - 11. Use G = Glass Contact
 - 12. Use A = Aluminum Contact
 - 13. Use O = Other Materials

2.02 SILICONE JOINT SEALANTS

- A. Single-Component, Non-sag, Neutral-Curing Silicone Joint Sealant: ASTM C920, Type S, Grade NS, Class 100/50, for Use NT.
 - 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Dow Corning Corporation; DOWSIL 790.
 - b. GE Advanced Materials Silicones; SCS2000 SilPruf LM.
 - c. Pecora Corporation; 301 NS
 - d. Sika Corporation, Construction Products Division; SikaSil-WS 290
 - e. Tremco Incorporated; Spectrem 1.
- B. Single-Component, Non-sag, Traffic-Grade, Neutral-Curing Silicone Joint Sealant: ASTM C920, Type S, Grade NS, Class 100/50, for Use T.
 - 1. Products: Subject to compliance with requirements, provide the following:
 - a. Pecora Corporation; 311 NS.
 - b. Sika Corporation, Construction Products Division; SilkaSil-728 NS.
 - c. Tremco Incorporated; Spectrem 800.
- C. Single-Component, Pourable, Traffic-Grade, Neutral-Curing Silicone Joint Sealant: ASTM C920, Type S, Grade P, Class 100/50, for Use T.
 - 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Dow Corning Corporation; 890-SL.
 - b. Pecora Corporation; 310 SL.
 - c. Sika Corporation, Construction Products Division; SilkaSil-728 SL.
 - d. Tremco Incorporated; Spectrem 900 SL.
- D. Mildew-Resistant, Single-Component, Nonsag, Neutral-Curing Silicone Joint Sealant: ASTM C920, Type S, Grade NS, Class 25, for Use NT.
 - 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Tremco Incorporated: Tremsil 200.
 - b. Pecora Corporation; 898 NST.
 - c. GE Advanced Materials; SCS1700 Sanitary.

2.03 POLYURETHANE JOINT SEALANTS

- A. Single-Component, Non-sag, Polyurethane Joint Sealant: ASTM C920, Type S, Grade NS, Class 100/50, for Use NT.
 - 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Sika Corporation, Construction Products Division; Sikaflex 15LM.
 - b. Pecora Corporation; Dynatrol I-XL.
 - c. Tremco Incorporated; Dymonic 100.
- B. Single-Component, Nonsag, Traffic-Grade, Polyurethane Joint Sealant: ASTM C920. Type S, Grade NS, Class 25, for Use T.
 - 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. BASF Building Systems; Masterseal NP1.
 - b. Sika Corporation, Construction Products Division; Sikaflex 1a.
 - c. Tremco Incorporated; Dymonic 100.
- C. Single-Component, Pourable, Traffic-Grade, Polyurethane Joint Sealant: ASTM C920, Type S, Grade P, Class 25, for Use T.
 - 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

- a. BASF Building Systems; MasterSeal SL 1.
- b. Pecora Corporation; Urexpan NR-201.
- c. Sherwin-Williams Company, Loxon SL1 Self-Leveling.
- d. Sika Corporation. Construction Products Division; Sikaflex 1CSL.
- e. Tremco Incorporated; Vulkem 45 SSL.
- D. Immersible Multicomponent, Nonsag, Traffic-Grade, Polyurethane Joint Sealant: ASTM C920, Type M, Grade NS, Class 25, for Uses T and I.
 - 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Sika Corporation, Construction Products Division, Sikaflex 2c NS EZ
 - b. BASF Building Systems; MasterSeal NP 2.
 - c. Pecora Corporation; Dynatred.
 - d. Tremco Incorporated; Dymeric 240 FC.

2.04 LATEX JOINT SEALANTS

- A. Latex Joint Sealant: Acrylic latex or siliconized acrylic latex, ASTM C834, Type OP, Grade NF.
 - 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. BASF Building Systems; MasterSeal NP 520.
 - b. GE Advanced Materials; Ultra Seal.
 - c. Pecora Corporation; AC-20+.
 - d. Tremco Incorporated; Tremflex 834.
 - e. Sherwin Williams Company (SherMax Urethanized Elastomeric Sealant).

2.05 PREFORMED JOINT SEALANTS

- A. Preformed Foam Joint Sealant: Manufacturer's standard preformed, precompressed, open-cell foam sealant manufactured from Polyurethane foam with minimum density of 10 lb/cu. ft. (160 kg/cu. m) and impregnated with a nondrying, water-repellent agent. Factory produce in precompressed sizes in roll or stick form to fit joint widths indicated; coated on one side with a pressure-sensitive adhesive and covered with protective wrapping.
 - 1. Products: Subject to compliance with requirements, provide the following:
 - a. Tremco Incorporated; Spectrum SimpleSeal.
 - b. Tremco Incorporated; Illmod 600
 - c. Emseal Joint Systems, Ltd.; 25V.
 - d. Schul International Company; Sealtite Standard.

2.06 ACOUSTICAL JOINT SEALANTS

- A. Acoustical Joint Sealant: Manufacturer's standard non-sag, paintable, non-staining latex sealant complying with ASTM C834. Product effectively reduces airborne sound transmission through perimeter joints and openings in building construction as demonstrated by testing representative assemblies according to ASTM E90.
 - 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Pecora Corporation; AC-20 FTR.
 - b. Sherwin-Williams Company, Sher-Max Urethanized Elastomeric Sealant
 - c. Tremco Incorporated; Tremflex 834, Acoustical/Curtain Wall Sealant
 - d. USG Corporation; SHEETROCK Acoustical Sealant.

2.07 JOINT SEALANT BACKING

- A. General: Provide sealant backings of material that are non-staining; are compatible with joint substrates, sealants, primers, and other joint fillers; and are approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.
- B. Cylindrical Sealant Backings: ASTM C1330, Type C (closed-cell material with a surface skin) Type B (bicellular material with a surface skin) or any of the preceding types, as approved in writing by joint-sealant manufacturer for joint application indicated, and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance.
- C. Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended by sealant manufacturer for preventing sealant from adhering to rigid, inflexible joint-filler materials or joint surfaces at back of joint. Provide self-adhesive tape where applicable.

2.08 MISCELLANEOUS MATERIALS

- A. Primer: Material recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.
- B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials, free of oily residues or other substances capable of staining or harming joint substrates and adjacent nonporous surfaces in any way, and formulated to promote optimum adhesion of sealants to joint substrates.
- C. Masking Tape: Non-staining, non-absorbent material compatible with joint sealants and surfaces adjacent to joints.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine joints indicated to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting joint-sealant performance.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

- A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions and the following requirements:
 - 1. Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant, including dust, paints (except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer), old joint sealants, oil, grease, waterproofing, water repellents, water, surface dirt, and frost.
 - 2. Clean porous joint substrate surfaces by brushing, grinding, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealants. Remove loose particles remaining after cleaning operations above by vacuuming or blowing out joints with oil-free compressed air. Porous joint substrates include the following:
 - a. Concrete.
 - b. Masonry.
 - c. Unglazed surfaces of ceramic tile.

- 3. Remove laitance and form-release agents from concrete.
- 4. Clean nonporous joint substrate surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants. Nonporous joint substrates include the following:
 - a. Metal.
 - b. Glass.
- B. Joint Priming: Prime joint substrates where recommended by joint-sealant manufacturer or as indicated by preconstruction joint-sealant-substrate tests or prior experience. Apply primer to comply with joint-sealant manufacturer's written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.
- C. Masking Tape: Use masking tape where required to prevent contact of sealant or primer with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

3.03 INSTALLATION OF JOINT SEALANTS

- A. General: Comply with joint-sealant manufacturer's written installation instructions for products and applications indicated, unless more stringent requirements apply.
- B. Sealant Installation Standard: Comply with recommendations in ASTM C1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.
- C. Install sealant backings of kind indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.
 - 1. Do not leave gaps between ends of sealant backings.
 - 2. Do not stretch, twist, puncture, or tear sealant backings.
 - 3. Remove absorbent sealant backings that have become wet before sealant application and replace them with dry materials.
- D. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and backs of joints.
- E. Install sealants using proven techniques that comply with the following and at the same time backings are installed:
 - 1. Place sealants so they directly contact and fully wet joint substrates.
 - 2. Completely fill recesses in each joint configuration.
 - 3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.
- F. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified in subparagraphs below to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.
 - 1. Remove excess sealant from surfaces adjacent to joints.
 - 2. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.
 - 3. Provide concave joint profile per Figure 8A in ASTM C1193, unless otherwise indicated.
 - 4. Provide flush joint profile where indicated per Figure 8B in ASTM C1193.
 - 5. Provide recessed joint configuration of recess depth and at locations indicated per Figure 8C in ASTM C1193.
 - a. Use masking tape to protect surfaces adjacent to recessed tooled joints.

G. Acoustical Sealant Installation: At sound-rated assemblies and elsewhere as indicated, seal construction at perimeters, behind control joints, and at openings and penetrations and at perimeters of acoustical Panel edge channels of Acoustical Panel Ceiling systems. with a continuous bead of acoustical sealant. Install acoustical sealant at both faces of partitions at perimeters and through penetrations. Comply with ASTM C919 and with manufacturer's written recommendations.

3.04 FIELD QUALITY CONTROL

- A. Field-Adhesion Testing: Field test joint-sealant adhesion to joint substrates as follows:
 - 1. Extent of Testing: Test completed and cured sealant joints as follows:
 - a. Perform 1 test for each 500 feet of joint length thereafter or 1 test per each floor per elevation.
 - 2. Test Method: Test joint sealants according to Method A, Field-Applied Sealant Joint Hand Pull Tab, in Appendix X1 in ASTM C1193 or Method A, Tail Procedure, in ASTM C1521.
 - a. For joints with dissimilar substrates, verify adhesion to each substrate separately; extend cut along one side, verifying adhesion to opposite side. Repeat procedure for opposite side.
 - 3. Inspect tested joints and report on the following:
 - a. Whether sealants filled joint cavities and are free of voids.
 - b. Whether sealant dimensions and configurations comply with specified requirements.
 - c. Whether sealants in joints connected to pulled-out portion failed to adhere to joint substrates or tore cohesively. Include data on pull distance used to test each kind of product and joint substrate. Compare these results to determine if adhesion passes sealant manufacturer's field-adhesion hand-pull test criteria.
 - 4. Record test results in a field-adhesion-test log. Include dates when sealants were installed, names of persons who installed sealants, test dates, test locations, whether joints were primed, adhesion results and percent elongations, sealant fill, sealant configuration, and sealant dimensions.
 - 5. Repair sealants pulled from test area by applying new sealants following same procedures used originally to seal joints. Ensure that original sealant surfaces are clean and that new sealant contacts original sealant.
- B. Evaluation of Field-Adhesion Test Results: Sealants not evidencing adhesive failure from testing or noncompliance with other indicated requirements will be considered satisfactory. Remove sealants that fail to adhere to joint substrates during testing or to comply with other requirements. Retest failed applications until test results prove sealants comply with indicated requirements.

3.05 CLEANING

A. Clean off excess sealant or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved in writing by manufacturers of joint sealants and of products in which joints occur.

3.06 PROTECTION

A. Protect joint sealants during and after curing period from contact with contaminating substances and from damage resulting from construction operations or other causes so sealants are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated joint sealants immediately so installations with repaired areas are indistinguishable from original work.

3.07 JOINT-SEALANT SCHEDULE

- A. Joint-Sealant Application: Exterior joints in horizontal traffic surfaces.
 - 1. Joint Locations:
 - a. Control and expansion joints in paver and pavement installations.
 - b. Isolation and contraction joints in cast-in-place concrete slabs.
 - c. Tile control and expansion joints.
 - 2. Silicone Joint Sealant: Single component, non-sag, traffic grade, neutral curing.
 - 3. Polyurethane Joint Sealant: Single component, non-sag, traffic grade Single component, pourable, traffic grade.
 - 4. Preformed Joint Sealant: Preformed foam sealant.
 - 5. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.
- B. Joint-Sealant Application: Exterior joints in horizontal traffic surfaces subject to water immersion.
 - 1. Joint Locations:
 - a. Joints in pedestrian plazas.
 - 2. Polyurethane Joint Sealant: Immersible, multicomponent, non-sag, traffic grade.
 - 3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.
- C. Joint-Sealant Application: Exterior joints in vertical surfaces and horizontal non-traffic surfaces.
 - 1. Joint Locations:
 - a. Construction joints in cast-in-place concrete.
 - b. Control and expansion joints in unit masonry.
 - c. Joints in dimension stone cladding.
 - d. Joints between metal panels.
 - e. Joints between different materials listed above.
 - f. Perimeter joints between materials listed above and frames of doors windows and louvers.
 - g. Control and expansion joints in ceilings and other overhead surfaces.
 - 2. Silicone Joint Sealant: Single component, non-sag, neutral curing, Class 100/50.
 - 3. Polyurethane Joint Sealant: Single component, non-sag, Class 100/50.
 - 4. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.
- D. Joint-Sealant Application: Interior joints in horizontal traffic surfaces.
 - 1. Joint Locations:
 - a. Isolation joints in cast-in-place concrete slabs.
 - b. Control and expansion joints in tile flooring.
 - 2. Polyurethane Joint Sealant: Single component, non-sag, traffic grade.
 - 3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.
- E. Joint-Sealant Application: Interior joints in vertical surfaces and horizontal non-traffic surfaces.
 - 1. Joint Locations:
 - a. Perimeter joints of exterior openings where indicated.
 - b. Tile control and expansion joints.
 - c. Vertical joints on exposed surfaces of walls and partitions.
 - d. Perimeter joints between interior wall surfaces and frames of interior doors windows and elevator entrances.
 - 2. Joint Sealant: Latex Acrylic based.
 - 3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.
- F. Joint-Sealant Application: Mildew-resistant interior joints in vertical surfaces and horizontal non-traffic surfaces.
 - 1. Joint Sealant Location:

- b. Tile control and expansion joints where indicated.
- 2. Joint Sealant: Mildew resistant, single component, non-sag, neutral curing, Silicone.
- 3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.
- G. Joint-Sealant Application: Interior acoustical joints in vertical surfaces and horizontal non-traffic surfaces.
 - 1. Joint Location:
 - a. Acoustical joints where indicated.
 - b. Other joints as indicated.
 - 2. Joint Sealant: Acoustical joint sealant.

3.08 SEALANT INSTALLATION LOG

- A. A tabular log of all sealant installations on the project shall be be keep and submitted with the O & M manuals at the completion of the project.
- B. Tabular log shall have columns for:
 - 1. Sealant type
 - 2. Sealant installation location
 - 3. Temperature during installation
 - 4. Date of Installation
 - 5. Manufacturer
 - 6. Sealant color installed.

END OF SECTION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

A. Section includes hollow-metal doors, fixed panels and frames.

1.03 DEFINITIONS

A. Minimum Thickness: Minimum thickness of base metal without coatings according to NAAMM-HMMA 803 or ANSI/SDI A250.8.

1.04 COORDINATION

A. Coordinate anchorage installation for hollow-metal frames. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors. Deliver such items to Project site in time for installation.

1.05 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include construction details, material descriptions, core descriptions, fire-resistance ratings, and finishes.
- B. Shop Drawings: Include the following:
 - 1. Elevations of each door type.
 - 2. Details of doors, including vertical- and horizontal-edge details and metal thicknesses.
 - 3. Frame details for each frame type, including dimensioned profiles and metal thicknesses.
 - 4. Locations of reinforcement and preparations for hardware.
 - 5. Details of each different wall opening condition.
 - 6. Details of anchorages, joints, field splices, and connections.
 - 7. Details of accessories.
- C. Schedule: Provide a schedule of hollow-metal work prepared by or under the supervision of supplier, using same reference numbers for details and openings as those on Drawings. Coordinate with final Door Hardware Schedule.

1.06 INFORMATIONAL SUBMITTALS

A. Product Test Reports: For each type of hollow-metal door and frame assembly, for tests performed by a qualified testing agency.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Deliver hollow-metal work palletized, packaged, or crated to provide protection during transit and Project-site storage. Do not use non-vented plastic.
 - 1. Provide additional protection to prevent damage to factory-finished units.
- B. Deliver welded frames with two removable spreader bars across bottom of frames, tack welded to jambs and mullions.

C. Store hollow-metal work vertically under cover at Project site with head up. Place on minimum 4-inch high wood blocking. Provide minimum 1/4-inch space between each stacked door to permit air circulation.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Ceco Door Products; an Assa Abloy Group company.
 - 2. Curries Company; an Assa Abloy Group company.
 - 3. Steelcraft; an Ingersoll-Rand company.
- B. Source Limitations: Obtain hollow-metal work from single source from single manufacturer.

2.02 EXTERIOR HOLLOW-METAL DOORS AND FRAMES

- A. Construct exterior doors and frames to comply with the standards indicated for materials, fabrication, hardware locations, hardware reinforcement, tolerances, and clearances, and as specified.
- B. Extra Heavy-Duty Doors and Frames: SDI A250.8 Level 3. At locations indicated in the Door and Frame Schedule.
 - 1. Physical Performance: Level A according to SDI A250.4.
 - 2. Doors:
 - a. Type: As indicated in the Door and Frame Schedule.
 - b. Thickness: 1 3/4 inches.
 - c. Face: Metallic-coated steel sheet, minimum thickness of 0.053 inch (16 gauge) (Level 3), with minimum A60 coating.
 - d. Edge Construction: Model 2, Seamless.
 - e. Core Materials:
 - Thermal-Rated Doors: Provide doors fabricated with a thermal-resistance value (R-value) of not less than R-10 when tested according to ASTM C1363. Provide Polyisocyanurate insulation.
 - 3. Frames:
 - a. Materials: Metallic-coated steel sheet, minimum thickness of 0.053 inch (16 gauge) (Level 3), with minimum A60 (ZF120) coating.
 - b. Construction: Full Profile Weld Type.
 - 4. Exposed Finish: Prime.

2.03 FRAME ANCHORS

- A. Jamb Anchors:
 - 1. Stud-Wall Type: Designed to engage stud, welded to back of frames; not less than 0.042 inch thick.
 - 2. Postinstalled Expansion Type for In-Place Concrete or Masonry: Minimum 3/8-inch diameter bolts with expansion shields or inserts. Provide pipe spacer from frame to wall, with throat reinforcement plate, welded to frame at each anchor location.
- B. Floor Anchors: Formed from same material as frames, minimum thickness of 0.042 inch, and as follows:
 - 1. Monolithic Concrete Slabs: Clip-type anchors, with two holes to receive fasteners.

2.04 MATERIALS

- A. Hot-Rolled Steel Sheet: ASTM A1011/A1011M, Commercial Steel (CS), Type B; free of scale, pitting, or surface defects; pickled and oiled.
- B. Metallic-Coated Steel Sheet: ASTM A 653/A 653M, Commercial Steel (CS), Type B.
- C. Frame Anchors: ASTM A879/A879M, Commercial Steel (CS), 04Z (12G) coating designation; mill phosphatized.
 - 1. For anchors built into exterior walls, steel sheet complying with ASTM A1008/A1008M or ASTM A1011/A1011M, hot-dip galvanized according to ASTM A153/A153M, Class B.
- D. Inserts, Bolts, and Fasteners: Hot-dip galvanized according to ASTM A153/A153M.

2.05 FABRICATION

- A. Fabricate hollow-metal work to be rigid and free of defects, warp, or buckle. Accurately form metal to required sizes and profiles, with minimum radius for metal thickness. Where practical, fit and assemble units in manufacturer's plant. To ensure proper assembly at Project site, clearly identify work that cannot be permanently factory assembled before shipment.
- B. Hollow-Metal Doors:
 - 1. Steel-Stiffened Door Cores: Provide minimum thickness 0.026 inch, steel vertical stiffeners of same material as face sheets extending full-door height, with vertical webs spaced not more than 6 inches apart. Spot weld to face sheets no more than 5 inches o.c. Fill spaces between stiffeners with glass- or mineral-fiber insulation.
 - 2. Vertical Edges for Single-Acting Doors: Bevel edges 1/8 inch in 2 inches.
 - 3. Top Edge Closures: Close top edges of doors with flush closures of same material as face sheets.
 - 4. Bottom Edge Closures: Close bottom edges of doors with end closures or channels of same material as face sheets.
 - 5. Exterior Doors: Provide weep-hole openings in bottoms of exterior doors to permit moisture to escape. Seal joints in top edges of doors against water penetration.
 - 6. Astragals: Provide overlapping astragal on one leaf of pairs of doors where required by NFPA 80 for fire-performance rating or where indicated. Extend minimum 3/4 inch beyond edge of door on which astragal is mounted or as required to comply with published listing of qualified testing agency.
- C. Hollow-Metal Frames: Where frames are fabricated in sections due to shipping or handling limitations, provide alignment plates or angles at each joint, fabricated of same thickness metal as frames.
 - 1. Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners unless otherwise indicated.
 - 2. Floor Anchors: Weld anchors to bottoms of jambs with at least four spot welds per anchor; however, for slip-on drywall frames, provide anchor clips or countersunk holes at bottoms of jambs.
 - 3. Jamb Anchors: Provide number and spacing of anchors as follows:
 - a. Stud-Wall Type: Locate anchors not more than 18 inches from top and bottom of frame. Space anchors not more than 32 inches o.c. and as follows:
 - 1) Three anchors per jamb up to 60 inches high.
 - 2) Four anchors per jamb from 60 to 90 inches high.
 - 3) Five anchors per jamb from 90 to 96 inches high.
 - 4) Five anchors per jamb plus one additional anchor per jamb for each 24 inches or fraction thereof above 96 inches high.

- b. Postinstalled Expansion Type: Locate anchors not more than 6 inches from top and bottom of frame. Space anchors not more than 26 inches o.c.
- 4. Head Anchors: Two anchors per head for frames more than 42 inches wide and mounted in metal-stud partitions.
- 5. Door Silencers: Except on weather-stripped frames, drill stops to receive door silencers as follows. Keep holes clear during construction.
 - a. Single-Door Frames: Drill stop in strike jamb to receive three door silencers.
 - b. Double-Door Frames: Drill stop in head jamb to receive two door silencers.
- D. Fabricate concealed stiffeners and edge channels from either cold- or hot-rolled steel sheet.
- E. Hardware Preparation: Factory prepare hollow-metal work to receive templated mortised hardware; include cutouts, reinforcement, mortising, drilling, and tapping according to ANSI/SDI A250.6, the Door Hardware Schedule, and templates.
 - 1. Reinforce doors and frames to receive non-templated, mortised, and surface-mounted door hardware.
 - 2. Comply with applicable requirements in ANSI/SDI A250.6 and BHMA A156.115 for preparation of hollow-metal work for hardware.

2.06 STEEL FINISHES

- A. Prime Finish: Clean, pretreat, and apply manufacturer's standard primer.
 - 1. Shop Primer: Manufacturer's standard, fast-curing, lead- and chromate-free primer complying with ANSI/SDI A250.10; recommended by primer manufacturer for substrate; compatible with substrate and field-applied coatings despite prolonged exposure.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. Examine roughing-in for embedded and built-in anchors to verify actual locations before frame installation.
- C. Prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.
- D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

- A. Remove welded-in shipping spreaders installed at factory. Restore exposed finish by grinding, filling, and dressing, as required to make repaired area smooth, flush, and invisible on exposed faces.
- B. Drill and tap doors and frames to receive non-templated, mortised, and surface-mounted door hardware.

3.03 INSTALLATION

A. General: Install hollow-metal work plumb, rigid, properly aligned, and securely fastened in place. Comply with Drawings and manufacturer's written instructions.

- B. Hollow-Metal Frames: Install hollow-metal frames of size and profile indicated. Comply with ANSI/SDI A250.11 or NAAMM-HMMA 840 as required by standards specified.
 - 1. Set frames accurately in position; plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is complete, remove temporary braces, leaving surfaces smooth and undamaged.
 - a. Where frames are fabricated in sections because of shipping or handling limitations, field splice at approved locations by welding face joint continuously; grind, fill, dress, and make splice smooth, flush, and invisible on exposed faces.
 - b. Remove temporary braces necessary for installation only after frames have been properly set and secured.
 - c. Check plumb, square, and twist of frames as walls are constructed. Shim as necessary to comply with installation tolerances.
 - 2. Floor Anchors: Provide floor anchors for each jamb and mullion that extends to floor, and secure with postinstalled expansion anchors.
 - 3. Metal-Stud Partitions: Solidly pack mineral-fiber insulation inside frames.
 - 4. Installation Tolerances: Adjust hollow-metal door frames for squareness, alignment, twist, and plumb to the following tolerances:
 - a. Squareness: Plus or minus 1/16 inch, measured at door rabbet on a line 90 degrees from jamb perpendicular to frame head.
 - b. Alignment: Plus or minus 1/16 inch, measured at jambs on a horizontal line parallel to plane of wall.
 - c. Twist: Plus or minus 1/16 inch, measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.
 - d. Plumbness: Plus or minus 1/16 inch, measured at jambs at floor.
- C. Hollow-Metal Doors: Fit hollow-metal doors accurately in frames, within clearances specified below. Shim as necessary.
 - 1. Non-Fire-Rated Steel Doors:
 - a. Between Door and Frame Jambs and Head: 1/8 inch plus or minus 1/32 inch.
 - b. Between Edges of Pairs of Doors: 1/8 inch to 1/4 inch plus or minus 1/32 inch.
 - c. At Bottom of Door: 5/8 inch plus or minus 1/32 inch.
 - d. Between Door Face and Stop: 1/16 inch to 1/8 inch plus or minus 1/32 inch.

3.04 ADJUSTING AND CLEANING

- A. Final Adjustments: Check and readjust operating hardware items immediately before final inspection. Leave work in complete and proper operating condition. Remove and replace defective work, including hollow-metal work that is warped, bowed, or otherwise unacceptable.
- B. Prime-Coat Touchup: Immediately after erection, sand smooth rusted or damaged areas of prime coat and apply touchup of compatible air-drying, rust-inhibitive primer.
- C. Metallic-Coated Surface Touchup: Clean abraded areas and repair with galvanizing repair paint according to manufacturer's written instructions.
- D. Touchup Painting: Cleaning and touchup painting of abraded areas of paint are specified in painting Sections.

END OF SECTION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. Section includes:
 - 1. Mechanical door hardware for the following:
 - a. Swinging doors.
 - 2. Cylinders for door hardware specified in other Sections.

1.03 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated. Include construction and installation details, material descriptions, dimensions of individual components and profiles, and finishes.
- B. Other Action Submittals:
 - 1. Door Hardware Schedule: Prepared by or under the supervision of Installer, detailing fabrication and assembly of door hardware, as well as installation procedures and diagrams. Coordinate final door hardware schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.
 - a. Submittal Sequence: Submit door hardware schedule concurrent with submissions of Product Data, Samples, and Shop Drawings. Coordinate submission of door hardware schedule with scheduling requirements of other work to facilitate the fabrication of other work that is critical in Project construction schedule.
 - b. Format: Comply with scheduling sequence and vertical format in DHI's "Sequence and Format for the Hardware Schedule." Double space entries, and number and date each page.
 - c. Format: Use same scheduling sequence and format and use same door numbers as in the Contract Documents.
 - d. Content: Include the following information:
 - 1) Identification number, location, hand, fire rating, size, and material of each door and frame.
 - 2) Locations of each door hardware set, cross-referenced to Drawings on floor plans and to door and frame schedule.
 - 3) Complete designations, including name and manufacturer, type, style, function, size, quantity, function, and finish of each door hardware product.
 - 4) Fastenings and other pertinent information.
 - 5) Explanation of abbreviations, symbols, and codes contained in schedule.
 - 6) Mounting locations for door hardware.
- C. Keying Schedule: After a keying meeting with the owner has taken place prepare a separate keying schedule detailing final instructions. Submit the keying schedule in electronic format. Include keying system explanation, door numbers, key set symbols, hardware set numbers and special instructions. Owner must approve submitted keying schedule prior to the ordering of permanent cylinders/cores.

1.04 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer. BNYDC will provide BEST 7-pin cores and keys. Contractor to provide door lever/ latch hardware that accepts BEST 7-pin core.

- B. Product Test Reports: For compliance with accessibility requirements, based on evaluation of comprehensive tests performed by manufacturer and witnessed by a qualified testing agency, for door hardware on doors located in accessible routes.
- C. Warranty: Special warranty specified in this Section.
- D. CLOSEOUT SUBMITTALS
 - 1. Maintenance Data: For each type of door hardware to include in maintenance manuals. Include final hardware and keying schedule.
- E. QUALITY ASSURANCE
 - 1. Installer Qualifications: Supplier of products and an employer of workers trained and approved by product manufacturers and an Architectural Hardware Consultant who is available during the course of the Work to consult with Contractor, Architect, and Owner about door hardware and keying.
 - a. Warehousing Facilities: In Project's vicinity.
 - b. Scheduling Responsibility: Preparation of door hardware and keying schedules.
 - c. Engineering Responsibility: Preparation of data for electrified door hardware, including Shop Drawings, based on testing and engineering analysis of manufacturer's standard units in assemblies similar to those indicated for this Project.
 - 2. Source Limitations: Obtain each type of door hardware from a single manufacturer.
 - 3. Means of Egress Doors: Latches do not require more than 15 lbf to release the latch. Locks do not require use of a key, tool, or special knowledge for operation.
- F. DELIVERY, STORAGE, AND HANDLING
 - 1. Inventory door hardware on receipt and provide secure lock-up for door hardware delivered to Project site.
 - 2. Tag each item or package separately with identification coordinated with the final door hardware schedule, and include installation instructions, templates, and necessary fasteners with each item or package.
 - 3. Deliver keys and permanent cores to Owner by registered mail or overnight package service.
- G. COORDINATION
 - 1. Installation Templates: Distribute for doors, frames, and other work specified to be factory prepared. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing door hardware to comply with indicated requirements.
 - 2. Security: Coordinate installation of door hardware, keying, and access control with Owner's security consultant.
 - 3. Existing Openings: Where hardware components are scheduled for application to existing construction or where modifications to existing door hardware are required, field verify existing conditions and coordinate installation of door hardware to suit opening conditions and to provide proper door operation.
- H. WARRANTY
 - 1. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of door hardware that fail in materials or workmanship within specified warranty period.
 - a. Failures include, but are not limited to, the following:
 - 1) Structural failures including excessive deflection, cracking, or breakage.
 - 2) Faulty operation of doors and door hardware.
 - 3) Deterioration of metals, metal finishes, and other materials beyond normal weathering and use.
 - b. Warranty Period: Three years from date of Substantial Completion, unless otherwise indicated.

- 1) Manual Closers: 10 years from date of Substantial Completion.
- I. Keying Conference: Conduct conference to comply with requirements in Division 01 Section "Project Meetings." Keying conference to incorporate the following criteria into the final keying schedule document:
 - 1. Function of building, purpose of each area and degree of security required.
 - 2. Plans for existing and future key system expansion.
 - 3. Requirements for key control storage and software.
 - 4. Installation of permanent keys, cylinder cores and software.
 - 5. Address and requirements for delivery of keys.
- J. At completion of installation, provide written documentation that components were applied to manufacturer's instructions and recommendations and according to approved schedule.

PART 2 - PRODUCTS

2.01 DOOR HARDWARE

- A. Provide door hardware for each door as scheduled on Drawings to comply with requirements in this Section.
 - 1. Door Hardware Sets: Provide quantity, item, size, finish or color required for each new door leaf. Provide function as required by location.
- B. Designations: Requirements for design, grade, function, finish, size, and other distinctive qualities of each type of door hardware are indicated in Part 3 "Door Hardware Schedule" Article. Products are identified by using door hardware designations, as follows:
 - 1. Named Manufacturers' Products: Manufacturer and product designation are listed for each door hardware type required for the purpose of establishing minimum requirements. Manufacturers' names are abbreviated in Part 3 "Door Hardware Schedule" Article.
 - 2. References to BHMA Designations: Provide products complying with these designations and requirements for description, quality, and function.

2.02 HINGES

- A. Hinges: BHMA A156.1. Provide template-produced hinges for hinges installed on hollow-metal doors and hollow-metal frames.
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on schedule or comparable product by one of the following:
 - a. Hager Companies.
 - b. IVES Hardware; an Ingersoll-Rand company.
 - c. McKinney Products Company; an ASSA ABLOY Group company.
 - d. Stanley Commercial Hardware; Div. of The Stanley Works.
 - 2. Quantity: Provide the following hinge quantity, unless otherwise indicated:
 - a. Three Hinges: For doors with heights 61 to 90 inches.
 - 3. Hinge Size: Provide the following, unless otherwise indicated, with hinge widths sized for door thickness and clearances required:
 - a. Widths up to 3'-0": 4-1/2 inch standard.
 - 4. Hinge Weight and Base Material: Unless otherwise indicated, provide the following:
 - a. Exterior Doors: Heavy weight, non-ferrous, ball bearing or oil impregnated bearing hinges unless Hardware Sets indicate standard weight.

2.03 CONVENTIONAL EXIT DEVICES

A. General Requirements: All exit devices specified herein shall meet or exceed the following criteria:

- 1. At doors not requiring a fire rating, provide devices complying with NFPA 101 and listed and labeled for "Panic Hardware" according to UL 305. Provide proper fasteners as required by manufacturer including sex nuts and bolts at openings specified in the Hardware Sets.
- 2. Except on fire rated doors, provide exit devices with hex key dogging device to hold the pushbar and latch in a retracted position. Provide optional keyed cylinder dogging on devices where specified in Hardware Sets.
- 3. Devices must fit flat against the door face with no gap that permits unauthorized dogging of the push bar. The addition of filler strips is not acceptable except in any case where the door light extends behind the device as in a full glass configuration.
- 4. Flush End Caps: Provide heavy weight impact resistant flush end caps made of architectural metal in the same finish as the devices as in the Hardware Sets. Plastic end caps will not be acceptable.
- 5. Lever Operating Trim: Where exit devices require lever trim, furnish manufacturer's heavy duty trim with cold forged escutcheons, beveled edges, and four threaded studs for thru-bolts.
 - a. Lock Trim Design: As indicated in Hardware Sets, provide finishes and designs to match that of the specified locksets. Provided free-wheeling type trim where indicated.
 - b. Where function of exit device requires a cylinder, provide an interchangeable core type keyed cylinder (Rim or Mortise) as specified in Hardware Sets.
- 6. Vertical Rod Exit Devices: Provide and install concealed vertical rod exit devices unless otherwise indicated.
- 7. Rail Sizing: Provide exit device rails factory sized for proper door width application.
- 8. Through Bolt Installation: For exit devices and trim as indicated in Door Hardware Sets.
- B. Conventional Push Rail Exit Devices, Aluminum Entrances: BHMA A156.3, Grade 1 certified panic devices furnished in the functions specified in the Hardware Sets. Push bar to be made of extruded aluminum, maximum projection of 3 inches, available in clad or anodized architectural finishes. Exit device design to fit narrow (minimum 2 inch), medium, or wide stile aluminum door applications.
- C. Acceptable Manufacturers:
 - 1. Von Duprin, an Allegion company 99 Series.
 - 2. Adams Rite Manufacturing 8000 Series.
 - 3. Falcon Hardware Dor-O-Matic 1490/1590 Series.

2.04 SURFACE BOLTS

- A. Surface Bolts: BHMA A156.16.
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on the drawings or comparable product by one of the following:
 - a. IVES Hardware; an Allegion company.
 - b. Rockwood Mfg.; an ASSA ABLOY Company

2.05 LOCK CYLINDERS

- A. Lock Cylinders: Tumbler type, constructed from brass or bronze, stainless steel, or nickel silver.
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on schedule or comparable product by one of the following:
 - a. Best Access Systems; Div. of Stanley Security Solutions, Inc.
 - b. SARGENT Manufacturing Company; an ASSA ABLOY Group company.
 - c. Corbin Russwin Manufacturing Company; an ASSA ABLOY Group company.

2.06 KEYING

- A. Keying System: Factory registered, complying with guidelines in BHMA A156.28, Appendix A. Incorporate decisions made in keying conference.
 - 1. Existing System:
 - a. Master key or grand master key locks to Owner's existing system.
- B. Keys: Nickel silver.
 - 1. Stamping: Permanently inscribe each key with a visual key control number and include the following notation:
 - a. Notation: "DO NOT DUPLICATE."

2.07 OPERATING TRIM

A. Operating Trim: BHMA A156.6; stainless steel, unless otherwise indicated.

2.08 SURFACE CLOSERS

- A. All door closers specified herein shall meet or exceed the following criteria:
 - 1. General: Door closers to be from one manufacturer, matching in design and style, with the same type door preparations and templates regardless of application or spring size. Closers to be non-handed with full sized covers including installation and adjusting information on inside of cover.
 - 2. Standards: Closers to comply with UL 10C for Positive Pressure Fire Test and be U.L. listed for use of fire rated doors.
 - 3. Cycle Testing: Provide closers which have surpassed 15 million cycles in a test witnessed and verified by UL.
 - 4. Size of Units: Comply with manufacturer's written recommendations for sizing of door closers depending on size of door, exposure to weather, and anticipated frequency of use. Where closers are indicated for doors required to be accessible to the physically handicapped, provide units complying with ICC A117.1.
 - 5. Closer Arms: Provide heavy duty, forged steel closer arms unless otherwise indicated in Hardware Sets.
 - 6. Closers shall not be installed on exterior or corridor side of doors; where possible install closers on door for optimum aesthetics.
 - 7. Closer Accessories: Provide door closer accessories including custom templates, special mounting brackets, spacers and drop plates, and through-bolt and security type fasteners as required for proper installation.
- B. Surface Closers: BHMA A156.4; rack-and-pinion hydraulic type with adjustable sweep and latch speeds controlled by key-operated valves and forged-steel main arm. Comply with manufacturer's written recommendations for size of door closers depending on size of door, exposure to weather, and anticipated frequency of use. Provide factory-sized closers, adjustable to meet field conditions and requirements for opening force.
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on schedule or comparable product by one of the following:
 - a. Corbin Russwin Hardware (RU) DC6000 Series
 - b. DORMA Architectural Hardware; Member of The DORMA Group North America.
 - c. LCN Closers (LC); an Allegion Company 4040 Series.
 - d. Norton Door Controls (NO); an ASSA ABLOY Group company 7500 Series.
 - e. Yale Locks and Hardware (YA) 4400 Series.

2.09 MECHANICAL STOPS AND HOLDERS

- A. Wall- and Floor-Mounted Stops: BHMA A156.16; polished cast brass, bronze, or aluminum base metal.
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on schedule or comparable product by one of the following:
 - a. IVES Hardware; an Allegion company.
 - b. Rockwood Mfg.; an ASSA ABLOY Company

2.10 DOOR GASKETING

- A. Door Gasketing: BHMA A156.22; air leakage not to exceed 0.50 cfm per foot of crack length for gasketing other than for smoke control, as tested according to ASTM E283; with resilient or flexible seal strips that are easily replaceable and readily available from stocks maintained by manufacturer.
- B. Replaceable Seal Strips: Provide only those units where resilient or flexible seal strips are easily replaceable and readily available from stocks maintained by manufacturer.
- C. Acceptable Manufacturers:
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on schedule or comparable product by one of the following:
 - a. National Guard Products.
 - b. Pemko Manufacturing Co.; an ASSA ABLOY Group company.
 - c. Zero International.

2.11 THRESHOLDS

- A. Thresholds: BHMA A156.21; fabricated to full width of opening indicated.
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on schedule or comparable product by one of the following:
 - a. National Guard Products.
 - b. Pemko Manufacturing Co.; an ASSA ABLOY Group company
 - c. Zero International.

2.12 FABRICATION

- A. Manufacturer's Nameplate: Do not provide products that have manufacturer's name or trade name displayed in a visible location except in conjunction with required fire-rated labels and as otherwise approved by Architect.
- B. Base Metals: Produce door hardware units of base metal indicated, fabricated by forming method indicated, using manufacturer's standard metal alloy, composition, temper, and hardness. Furnish metals of a quality equal to or greater than that of specified door hardware units and BHMA A156.18.
- C. Fasteners: Provide door hardware manufactured to comply with published templates prepared for machine, wood, and sheet metal screws. Provide screws that comply with commercially recognized industry standards for application intended, except aluminum fasteners are not permitted. Provide Phillips flat-head screws with finished heads to match surface of door hardware, unless otherwise indicated.
 - 1. Concealed Fasteners: For door hardware units that are exposed when door is closed, except for units already specified with concealed fasteners. Do not use through bolts for installation where bolt head or nut on opposite face is exposed unless it is the only means

of securely attaching the door hardware. Where through bolts are used on hollow door and frame construction, provide sleeves for each through bolt.

2. Gasketing Fasteners: Provide noncorrosive fasteners for exterior applications and elsewhere as indicated.

2.13 FINISHES

- A. Provide finishes complying with BHMA A156.18 as indicated in door hardware schedule.
- B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- C. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine doors and frames, with Installer present, for compliance with requirements for installation tolerances, labeled fire-rated door assembly construction, wall and floor construction, and other conditions affecting performance.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Steel Doors and Frames: For surface applied door hardware, drill and tap doors and frames according to ANSI/SDI A250.6.

3.03 INSTALLATION

- A. Mounting Heights: Mount door hardware units at heights to comply with the following unless otherwise indicated or required to comply with governing regulations.
 - 1. Standard Steel Doors and Frames: ANSI/SDI A250.8
- B. Install each door hardware item to comply with manufacturer's written instructions. Where cutting and fitting are required to install door hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation of surface protective trim units with finishing. Do not install surface-mounted items until finishes have been completed on substrates involved.
 - 1. Set units level, plumb, and true to line and location. Adjust and reinforce attachment substrates as necessary for proper installation and operation.
 - 2. Drill and countersink units that are not factory prepared for anchorage fasteners. Space fasteners and anchors according to industry standards.
- C. Hinges: Install types and in quantities indicated in door hardware schedule but not fewer than the number recommended by manufacturer for application indicated or one hinge for every 30 inches of door height, whichever is more stringent, unless other equivalent means of support for door, such as spring hinges or pivots, are provided.
- D. Thresholds: Set thresholds for exterior doors and other doors indicated in full bed of sealant.

- E. Perimeter Gasketing: Apply to head and jamb, forming seal between door and frame.
- F. Door Bottoms: Apply to bottom of door, forming seal with threshold when door is closed.

3.04 ADJUSTING

- A. Initial Adjustment: Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate as intended. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.
 - 1. Door Closers: Adjust sweep period to comply with accessibility requirements and requirements of authorities having jurisdiction.

3.05 CLEANING AND PROTECTION

- A. Clean adjacent surfaces soiled by door hardware installation.
- B. Clean operating items as necessary to restore proper function and finish.
- C. Provide final protection and maintain conditions that ensure that door hardware is without damage or deterioration at time of Substantial Completion.

3.06 DEMONSTRATION

A. Instruct Owner's maintenance personnel to adjust, operate, and maintain mechanical and electromechanical door hardware.

3.07 DOOR HARDWARE SETS

- A. The hardware sets represent the design intent and direction of the owner and architect. They are a guideline only and should not be considered a detailed hardware schedule. Discrepancies, conflicting hardware and missing items should be brought to the attention of the architect with corrections made prior to the bidding process. Omitted items not included in a hardware set should be scheduled with the appropriate additional hardware required for proper application and functionality.
- B. The supplier is responsible for handing and sizing all products as listed in the door hardware sets. Quantities listed are for each pair of doors, or for each single door.

HARDWARE SCHEDULE

HARDWARE SET #1

3 pr. 1 1 1 1 1	Hinges Closers Panic Device Door Bottoms Wall Stops Kickplates Saddle	Stanley FBB199 5"x4-1/2" LCN 4111 - CUSH Von Duprin 9975L-996L Zero 39A Ives WS407-CVX Rockwood K1125 (12" high) National Guard Products 896 HD	US32D Painted Alum. US32D Alum. BHMA 630 US32D Mill Alum.
1	X3 Mortise/ Rim Cylinder	100X00N MK	626

HARDWARE SET #2

END OF SECTION

PART 1 GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Agreement, including General and Supplementary Conditions, and Division 01 of the Project Manual, apply to work of this Section.

1.02 SUMMARY

- A. This Section includes the following:
 - 1. Surface Preparation.
 - 2. Extent of painting work is shown on drawings and schedules, and as herein specified.
 - 3. The Work includes painting and finishing of all interior and exterior work, except as otherwise indicated.
 - 4. Stencil painting fire rated and/or smoke tight wall assembly identification.
- B. Work Not Included
 - 1. Exposed galvanized structural and miscellaneous steel.
 - 2. Exposed equipment, ductwork, piping, and conduits.

1.03 STANDARDS

- A. All work of this section shall conform to industry standards and/or manufacturer's recommendations.
- B. ASTM D16 "Standard Terminology for Paint, Related Coatings, Materials, and Applications".
- C. ASTM D4214 "Standard Test Methods for Evaluating the Degree of Chalking of Exterior Paint Films".
- D. ASTM D660 "Standard Test Method for Evaluating Degree of Checking of Exterior Paints".
- E. ASTM D661 "Standard Test Method for Evaluating Degree of Cracking of Exterior Paints".
- F. ASTM D714 "Standard Test Method for Evaluating Degree of Blistering of Paints".
- G. ASTM D5324 "Standard Guide for Testing Water-Borne Architectural Coatings".
- H. ASTM D3170 "Standard Test Method for Chipping Resistance of Coatings".
- I. SSPC SP 1 "Solvent Cleaning".
- J. SSPC SP 2 "Hand Tool Cleaning".
- K. SSPC SP 3 "Power Tool Cleaning".
- L. SSPC SP 13/NACE No. 6 "Surface Preparation for Concrete".
- M. EPA-Method 24.
- N. OTC (Ozone Transport Commission) Regulation No. 41.
- 1.04 SUBMITTALS
 - A. Submit pursuant to Section 013300 Submittal Procedures:

- B. Submit pursuant to Section 016000 Product Requirements.
- C. Manufacturer's Literature: Material description and application instructions for each type of material specified or required.
- D. Coating Maintenance Manual: Upon conclusion of the project, the Contractor or paint manufacturer/supplier shall furnish a coating maintenance manual, such as Sherwin-Williams "Custodian Project Color and Product Information" report or equal. Manual shall include an Area Summary with finish schedule, Area Detail designating where each product/color/finish was used, product data pages, Material Safety Data Sheets, care and cleaning instructions, touch-up procedures, and color samples ("drops") of each color and finish used.
- E. Manufacturer's latest array of full line of colors (color fans).
- F. For materials to receive stain & polyurethane provide two samples of each selected stain color on each wood species being used.
- G. Submit OTC (Ozone Transport Commission) lower VOC compliant products only. Colorant/Tint used in coatings shall add no additional VOC to final product.
- H. Provide Manufacturer Safety Data Specs (MSDS).

1.05 QUALITY ASSURANCE

- A. Experienced workmen familiar with the work shall perform all work of this section according to manufacturers' recommendations and/or industry standards.
- B. Provide materials only in factory sealed and labeled containers. Reuse of any containers for any reason is prohibited and will result in work not being acceptable.
- C. Unless specified, or Architect approved to the contrary, provide all coating materials from same manufacturer.
- 1.06 PRODUCT DELIVERY, STORAGE AND HANDLING
 - A. Pursuant to manufacturers published instructions.
 - B. Protect against moisture exposure and damage.
 - C. Receive paint materials only in unopened, original containers with labels intact. Store materials on site in an approved location. When so ascertained, remove immediately from job site all damaged or otherwise defective material.
 - D. Provide labels on each container with the following information:
 - 1. Name or title of product.
 - 2. Manufacturer's color identification code
 - 3. Manufacturer's stock number.
 - 4. Manufacturer's name.
 - 5. VOC Content.
 - 6. Batch Date.
 - 7. Contents by volume, for major pigment and vehicle constituents.
 - 8. Thinning instructions.
 - 9. Application instructions.

1.07 PROJECT/SITE CONDITIONS

- A. Environmental conditions can be modified only if such requirements are a part of manufacturer's published application instructions.
- B. Apply paint materials only when surface and air temperatures are above 50 degrees F for 48 hours before, during, and after the paint application.
- C. Do not apply exterior paint or stain during rain, snow, or damp weather.
- D. Do not apply paint in direct sunlight.
- E. Apply paint materials only when relative humidity is lower than 85% and surface temperature is at least 5 degrees F above dew point.
 - 1. Conditions must remain acceptable to manufacturer's recommendations during drying time.
- F. Apply paint only to surfaces that are free of surface moisture.
- G. Do not apply paint in areas with airborne dust or where dust can be generated.

1.08 SAMPLING OF MATERIALS

A. Samples of materials being used on the job may be taken at any time at discretion of Architect and checked for compliance to these specifications.

1.09 EXTRA STOCK

- A. Provide 1 gallon of each separate color and finish product used on Project.
- B. Label each container with color, texture, sheen, and room designation, in addition to manufacturer's unobstructed label.

1.10 DEFINITIONS

- A. Conform to ANSI/ASTM D16 for interpretation of terms used in this Section.
- B. The term "Paint", as used herein, includes enamels, paints, sealers, fillers, emulsions, stains, varnishes and other coatings whether used as prime, intermediate, or finish coats.
- C. "MDF" equals minimum dry film thickness. The numbers specified denote the thickness of each coat.
- D. "Properly Painted Surface" A surface that is uniform in appearance, color, sheen, and without telegraphing of any portion of the substrate. It is one that is free of foreign material, lumps, skins, runs, sags, holidays, misses, strike-through, or insufficient coverage. It is a surface that is free of drips, spatters, spills, or overspray which a Contractor's workforce may cause. Compliance to meeting the criteria of a "Properly Painted Surface" shall be determined by the Architect when viewed without magnification at a distance of five (5) feet or more under normal lighting (both daylight and artificial) conditions and from a normal viewing position.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the Work include, but are not limited to, the following:
 - 1. General Architectural Coatings
 - a. Sherwin Williams Company (Basis of Design).
 - b. Benjamin Moore & Co.
 - c. Architect Approved Equivalent.
- B. Provide products specifically formulated for geographical area in which Project is located.

2.02 COLORS

- A. Selection: by Architect from manufacturer's full range.
- B. Proprietary names used to designate colors or materials are not intended to imply that products of those manufacturers are required to the exclusion of Architect approved equivalent products of other manufacturers unless noted otherwise.

2.03 COATING SYSTEMS

- A. Gypsum board, interior:
 - 1. Sherwin Williams
 - a. Drywall Primer: USG Sheetrock Brand First Coat Primer MDF 0.9-1.2
 - b. Paint Primer: ProMar 200 Zero VOC Primer; MDF 1.5
 - c. Two coats: ProMar 200 Zero VOC Low Sheen Eg-Shel; MDF 1.6
 - d. Total System: MDF 4.7
- B. Ferrous metals, shop primed (flat and gloss, solvent base)
 - 1. Sherwin Williams
 - a. Primer: Pro Industrial Pro-Cryl Universal Primer (B66-310);
 - b. MDF 2.0-4.0
 - c. Two coats: Pro Industrial Acrylic Semi-Gloss; MDF 2.5 per coat
 - d. Total System: MDF 7.0 9.0
- C. Ferrous Metal hidden from view (e.g. back side of door frames, lintels, etc.);
 - 1. Sherwin Williams
 - a. One Coat: Pro Industrial Pro-Cryl Universal Primer (B66-310); MDF 2.0-4.0
- D. Concrete Floor:
 - 1. Sherwin Williams
 - a. One Coat: ArmorSeal Tread-Plex Primer (B90W110); MDF 1.5-2.0
 - b. Two Coats: ArmorSeal Tread-Plex 100% Acrylic Water Based Floor Coating (B90 Series); MDF 1.5-2.0
 - c. Total System: MDF 6.0
- E. Steel Substrates:
 - 1. Sherwin Williams
 - a. One Coat: Pro Industrial DTM Acrylic Primer/Finish (B66W1); MDF 2.5-5.0
 - b. Two Coats: Pro Indstrial DTM Acrylic Eg-Shel (B66-1250 Series); MDF 2.5-4.0
 - c. Total System: MDF 13.0

PART 3 EXECUTION

3.01 EXAMINATION

- A. Do not begin application of paints and finishes until substrates have been properly prepared.
- B. Verify that surfaces are ready to receive work as instructed by the product manufacturer.
- C. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially affect proper application.
- D. Test shop-applied primer for compatibility with subsequent cover materials.
- E. Measure moisture content of surfaces using an electronic moisture meter. Do not apply finishes unless moisture content of surfaces is below the following maximums:
 - 1. Gypsum Wallboard: 12 percent.
 - 2. Masonry, Concrete, and Concrete Masonry Units: 12 percent.
 - 3. Interior Wood: 15 percent, measured in accordance with ASTM D4442.

3.02 GENERAL PREPARATION (ALL SUBSTRATES)

- A. Clean surfaces thoroughly and correct defects prior to application.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
- C. Remove surface appurtenances, including electrical plates, hardware, light fixture trim, escutcheons, and fittings, prior to preparing surfaces or finishing.
- D. Seal surfaces that might cause bleed through or staining of topcoat.

3.03 CONCRETE AND CMU PREPARATION

- A. Remove all surface dust, dirt and other contaminants by brooming, air blast, or vacuum cleaner.
- B. Remove form release agents, laitance, dirt and other contamination, as required by coatings manufacturer, by using a light blast with fine silica sand.
- C. Obtain allowable moisture content level from coatings manufacturer. Determine moisture content by means of a moisture meter designed specifically for concrete and operated by a qualified inspector. Apply coatings only after all conditions conform to published requirements of coating manufacturer.

3.04 GYPSUM BOARD SURFACE PREPARATION

- A. Do not use linseed oil putty, glazing materials, patching pencils, caulking, or masking tape on surfaces to be painted.
- B. Sand and dust as necessary.
- C. Remove all dust, dirt, powdery residue, grease, oil, wax, or any other contaminants.
- D. Spot prime defects after repair.

3.05 FERROUS METAL SURFACE PREPARATION

- A. Shop Primed
 - 1. Shop-Primed Surfaces: Sand and scrape to remove loose primer and rust. Feather edges to make touch-up patches inconspicuous. Clean surfaces with solvent. Prime bare steel surfaces. Re-prime entire shop-primed item.
 - 2. Remove oils and lubricants by using mineral spirits or xylol solvents. Change applicators frequently to avoid recontamination. Execute pursuant to SSPC SP-1.

3.06 APPLICATION

- A. Beginning of installation means acceptance of existing surfaces.
- B. Apply paint pursuant manufacturer's directions. Use applicators and techniques best suited for type of material being applied.
- C. Apply additional coats when undercoats, stains or other conditions show through final coat of paint, until paint film is of uniform finish, color, and appearance. Give special attention to ensure that edges, corners, crevices, welds, and exposed fasteners receive a dry film thickness equivalent to that of flat surfaces.
- D. Sand lightly between each succeeding enamel or varnish coat.
- E. Spray Painting: allowable interiors to be approved by the Architect. Limit spray-painting on interior surface to acoustical plaster (if any) and service spaces such as mechanical equipment rooms.
- F. Minimum coating thickness: apply each material at not less than manufacturer's recommended spreading rate.
- G. Prime coats: apply a prime coat if specified to material which is required to be painted or finished, and which has not been prime coated.
- H. Recoat primed and sealed walls and ceilings where there is evidence of suction spots or unsealed areas in first coat, to assure a finish coat with no burn-through or other defects due to insufficient sealing.
- I. Roller Applications: roll and redistribute paint to an even and fine texture. Leave no evidence of rolling such as laps, irregularity in texture, skid marks, or other surface imperfections.
- J. Pigmented (Opaque) Finishes: Completely cover to provide an opaque, smooth surface of uniform finish, color, appearance and coverage. Cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness or other surface imperfections are not acceptable. Cut in sharp lines and color breaks.
- K. Completed Work: Match approved samples for color, texture and coverage. Remove, refinish or repaint Work not in compliance with specified requirements.

3.07 INCLUSIONS

- A. Paint all surfaces specified, scheduled, illustrated, and otherwise exposed to view except those items or surfaces specifically noted.
- B. Finish recesses same as adjoining rooms. Finish all other surfaces same as nearest or adjoining surfaces unless specifically noted otherwise.

- C. Paint surfaces behind equipment and furniture same as equal or adjacent exposed surfaces.
- D. Paint all hollow metal doors and frames that do not have a factory provided finish.
 - 1. As directed by Architect, hollow metal frames and doors may be different colors on each side of frame and/or door.
 - 2. Finish door tops, bottoms and side edges same as faces, unless otherwise indicated.
 - 3. Hollow metal doors and/or frames may be painted different colors from one side to the other.
- E. Paint overhead door steel jambs and lintels.
- F. Stencil paint in contrasting color "FIRE AND/OR SMOKE BARRIER PROTECT ALL OPENINGS" at tops of all fire rated and/or smoke tight walls and or partitions. Lettering must be a minimum 3.0 inches in height, must appear within 15 feet of the end of each wall or partition and at intervals not exceeding 30 feet measured horizontally along the wall or partition.

3.08 PROTECTION OF OTHER WORK

- A. Protect adjacent surfaces, whether to be painted or not, against damage by painting and finishing work. Correct any damages by cleaning, repairing or replacing, and repainting, as directed by Architect.
- B. Coordinate the maintenance and subsequent removal of temporary protective wrappings.

3.09 FIELD QUALITY CONTROL

- A. Dry Film Thickness Testing: Owner may engage the services of a qualified testing and inspecting agency to inspect and test paint for dry film thickness.
 - 1. Contractor shall touch up and restore painted surfaces damaged by testing. If test results show that dry film thickness of applied paint does not comply with paint manufacturer's written recommendations, Contractor shall pay for testing and apply additional coats as needed to provide dry film thickness that complies with paint manufacturer's written recommendations.

3.10 CLEANING

- A. Daily clean up: During the progress of the Work, remove from the project daily, all discarded paint materials, rubbish, cans and rags.
- B. Properly handle, store, and dispose of all hazardous materials.
- C. Upon completion, clean all glass and other paint--spattered surfaces. Remove spattered paint by proper methods of washing and scraping, using care not to scratch or otherwise damage-finished surfaces. Restore all damaged surfaces to their original condition.
- D. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

END OF SECTION

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

- A. This section describes the general requirements for all mechanical items and systems required by the Contract Documents.
- B. Comply with all Contract Requirements, General Conditions, Supplementary Conditions and Division 1 Sections applying to or affecting the Work of Division 23.
- C. Unless specifically dimensioned, the Work shown on the Drawings is in diagrammatic form only to show general arrangement.
- D. Include, in the Work, all accessories and appurtenances, necessary and integral, for the intended operation of any system, component or device, as such systems, components and devices are specified.
- E. Do not install pipe or conduit through ductwork.
- F. If the pipe or duct size shown on the Drawings does not match the connection size of the equipment that it is connected to, provide the necessary transition pieces at the piece of equipment.
- G. Do not use or allow to be used asbestos or asbestos-containing materials on this project. Be rigorous in assuring that all materials, equipment, systems and components thereof do not contain asbestos. Any deviations from this requirement shall be remedied at the Contractor's expense without regard to prior submittal approvals.

1.02 RELATED DOCUMENTS

A. The General Conditions and General Requirements Division 1 apply to the Work of this Section.

1.03 REFERENCE STANDARDS

- A. Compliance with the following codes and standards shall be required:
 - 1. Codes, Rules and Regulations of the State of New York
 - 2. USAS USA Standards Institute (Formerly ASA)
 - 3. AMCA Air Moving and Conditioning Association
 - 4. ADC Air Diffusion Council
 - 5. NEMA National Electrical Manufacturers Association
 - 6. FM Factory Mutual
 - 7. NFPA National Fire Protection Association
 - 8. ASTM American Society for Testing Materials
 - 9. UL Underwriters Laboratories. Inc.
 - 10. NEC National Electrical Code
 - 11. ASME American Society of Mechanical Engineers
 - 12. ANSI American National Standards Institute
 - 13. OSHA Occupational Safety and Health Act
 - 14. BSA Board of Standards and Appeals
 - 15. MEA Materials and Equipment Acceptance
 - 16. DEC New York State Department of Environmental Conservation 6
 - NYCRR Part 613 Handling and Storage of Petroleum
 - 17. ASHRAE American Society of Heating, Refrigeration and Air Conditioning Engineers.
 - 18. AWWA American Water Works Association

- 19. MSS Manufacturer's Standardization Society of the Valve and Fitting Industry
- 20. ARI American Refrigeration Institute
- 21. SMACNA Sheet Metal and Air Conditioning Contractor's Nation-al Association
- 22. TEMA Tubular Exchanger Manufacturers Association
- 23. F.S. or FED Spec. Federal Specification
- 24. ASA Acoustical Society of America
- 25. NACE National Association or Corrosion Engineers
- 26. ASSE American Society of Sanitary Engineers
- 27. International Building Code
- 28. International Fire Code
- 29. International Existing Building Code
- 30. International Fuel Gas Code
- 31. International Plumbing Code
- 32. International Energy Conservation Code
- 33. International Mechanical Code
- 34. New York State Industrial Code Rules
- 35. IRI Industrial Risk Insurers
- 36. AGA American Gas Association
- 37. AABC American Air Balance Council
- 38. NEBB National Environmental Balancing Bureau
- 39. AWS American Welding Society

1.04 DEFINITIONS

- A. "Provide" means furnish and install, complete the specified material, equipment or other items and perform all required labor to make a finished installation.
- B. "Furnish and install" has the same meaning as given above for "Provide."
- C. Refer to General Conditions for other definitions.

1.05 ABBREVIATIONS

- A. Reference by abbreviation may be made in the Specifications and the Drawings in accordance with the following list:
 - 1. HVAC Heating, Ventilating and Air Conditioning
 - 2. CM Construction Manager
 - 3. AC Air Conditioning
 - 4. H & V Heating and Ventilating
 - 5. AWG American Wire Gauge
 - 6. BWG Birmingham Wire Gauge
 - 7. USS United States Standard
 - 8. B & S Brown & Sharpe
 - 9. OS & Y Outside Screw and Yoke
 - 10. IBBM Iron Body Brass Mounted
 - 11. WSP Working Steam Pressure
 - 12. PSIG Pounds per Square Inch Gauge
 - 13. PRV Pressure Reducing Valve
 - 14. GPM Gallons per Minute
 - 15. MBH Thousand BTU per hour
 - 16. BTU British Thermal Units
 - 17. WG Water Gage
 - 18. LB Pound (Also shown as: #)
 - 19. ASME American Society of Mechanical Engineers

- 20. ASTM American Society for Testing Materials
- 21. ABMA American Boiler Manufacturers Association
- 22. ASA American Standards Associates
- 23. MER Mechanical Equipment Room See Drawings for additional abbreviations

1.06 REVIEW OF CONTRACT DOCUMENTS AND SITE

- A. Give written notice with the submission of bid to the Architect/Engineer of any materials or apparatus believed inadequate or unsuitable, in violation of laws, ordinances, rules or regulations of Authorities having jurisdiction, and any necessary items of work omitted. In the absence of such written notice it is mutually agreed that the Contractor has included the cost of all required items in his proposal for a complete project.
- B. Contractors shall acknowledge that they have examined the Plans, Specifications and Site, and that from his own investigations he has satisfied himself as to the nature and location of the Work; the general and local conditions, particularly those bearing upon transportation, disposal, handling and storage of materials; availability of labor, utilities, roads and uncertainties of weather; the composition and condition of the ground; the characters quality and quantity of subsurface materials to be encountered; the character of equipment and facilities needed preliminary to and during the execution of the Work; all federal, state, county, township and municipal laws, ordinances and regulations particularly those relating to employment of labor, rates of wages, and construction methods; and all other matters which can in any way affect the Work or the cost thereof under this Contract. Any failure by the Contractor to acquaint himself with the available information concerning these conditions will not relieve him from the responsibility for successfully performing the Work.
- C. Owner assumes no responsibility for any understanding or representation made during or prior to the negotiation and execution of this Contract unless such understanding or representations are expressly stated in the Contract and the Contract expressly provides that the responsibility, therefore, is assumed by the Owner.

1.07 MEASUREMENTS

A. Base all measurements, both horizontal and vertical from established bench marks. Make all Work agree with these established lines and levels. Verify all measurements at site; and check the correctness of same as related to the Work.

1.08 LABOR AND MATERIALS

- A. Provide all materials and apparatus required for the Work of new and first-class quality. Furnish, deliver, arrange, erect, connect and finish all materials and equipment in every detail, so selected and arranged as to fit properly into the building spaces.
- B. Remove all materials delivered, or work erected, which does not comply with Drawings or Specifications, and replace with proper materials, or correct such work as directed, at no additional cost to the Owner.

1.09 COVERING OF WORK

A. Do not cover up or hide from view any duct, piping, fitting, or other work of any kind before it has been examined or approved by the Architect/Engineer and/or other authority having jurisdiction over the same. Remove and correct immediately any unacceptable or imperfect work or unauthorized or disapproved materials discovered immediately after being disapproved.

1.10 PROTECTION

- A. Protect the Work and material of all trades from damage and replace all damaged material with new.
- B. Protect work and equipment until the Work is finally inspected, tested, and accepted; protect the Work against theft, injury or damage; and carefully store material and equipment received on site which is not immediately installed; close open ends of work with temporary covers or plugs during construction to prevent entry of foreign material.
- C. Preserve all public and private property, along and adjacent to the Work, and use every precaution necessary to prevent damage or injury thereto. Use suitable precautions to prevent damage to pipes, conduits and other underground structures or utilities, and carefully protect from disturbance or damage all property marks until an authorized agent has witnessed or otherwise referenced their location, and do not remove them until directed.

1.11 CUTTING AND PATCHING

- A. Provide all cutting and rough patching required for the Work. Perform all finish patching.
- B. Furnish and locate all sleeves and inserts required before the floors and walls are built, pay the cost of cutting and patching required for pipes where sleeves and inserts were not installed in time, or where incorrectly located. Provide all drilling required for the installation of hangers.
- C. Punch or drill all holes cut through concrete slabs or arches from the underside. Do not cut structural members without the approval of the Architect/Engineer. Perform all cutting in a manner directed by the Architect/Engineer.
- D. Do not do any cutting that may impair strength of building construction. Do no drill any holes, except for small screws, in beams or other structural members without obtaining prior approval. All Work shall be done in a neat manner by mechanics skilled in their trades and as approved.

1.12 SUBMITTALS

- A. Submit for review, shop drawings for all materials and equipment furnished and installed under this Contract. Submissions shall include but not be limited to:
 - 1. Ductwork layout drawings, air devices and accessories
 - 2. Automatic temperature control equipment, diagrams and control sequences
 - 3. Equipment, fixtures, and appurtenances
- B. Reports
 - 1. Compliance with listings and approvals for equipment and for fire ratings.
 - 2. Acceptance certificates from inspecting agencies.
 - 3. Complete printed and illustrated operating instructions in report format.
 - 4. Manufacturer's performance tests of equipment.
 - 5. Field operating test results for equipment.
 - 6. Performance report on the balancing of air and water systems.
 - 7. Manufacturer's reports on motorized equipment alignment and installation.
- C. Specific references to any article, device, product or material, fixture or item of equipment by name, make or catalog number shall be interpreted as establishing a basis of cost and a standard of quality. All devices shall be of the make and type listed by Special Agencies, such as the Underwriters' Laboratories, and where required, approved by the Fire Department.

1.13 SPACE ALLOTMENTS AND SUBSTITUTIONS

- A. The space allotments and equipment layouts on the Drawings are based on the manufacturer's model indicated or scheduled as the "Basis of Design". Ensure that any equipment that is submitted other than the "Basis of Design" will fit in the space allotment and will provide the necessary maintenance clearances as recommended by the manufacturer. If maintenance clearances are not met, pay for any changes such that maintenance clearances will be met.
- B. Bear all costs associated with re-layout of the equipment, changes to piping/ductwork, and other changes as required if approved equipment other than the "Basis of Design" equipment is purchased. This shall also include any structural steel modifications and structural steel design changes. Submit, at no cost to the Owner, a steel design stamped by a structural engineer licensed in the state in which the Work is to be performed for structural modifications that must be made resulting from the use of equipment other than the "Basis of Design" or not specified.

1.14 MATERIAL SAFETY DATA SHEETS

A. Submit material safety data sheets (MSDS) for all chemicals, hydraulic fluids, seal oils, lubricating oils, glycols and any other hazardous materials used in the performance of the Work, in accordance with the US Department of Labor, Occupational Safety and Health Administration (OSHA) hazard communication and right-to-know requirements stipulated in 29 CFR 1910.1200 (g).

1.15 MOTORS AND STARTERS

- A. Provide new NEMA Standard electric motors, sized and designed to operate at full load and full speed continuously without causing noise, vibration, and temperature rise in excess of their rating. Provide motors with a service factor of at least 1.15.
- B. Equip motors for belt driven equipment with rails with adjusting screws for belt tension adjustment. Weather protect motors exposed to the weather.
- C. Install high efficiency electric motors for air handling units, relief fans, and exhaust fans.
- D. Provide all motors for use with Variable Frequency Drives with "high efficiency inverter duty" insulation class "F" with class "B" temperature rise and that conform to or exceed the International Energy Conservation Code or the Federal EP Act of 1992 requirements for efficiency.
- E. Provide stainless steel nameplates, permanently attached to the motor, and having the following information as a minimum:
 - 1. Manufacturer
 - 2. Type
 - 3. Model
 - 4. Horsepower
 - 5. Service Factor
 - 6. RPM
 - 7. Voltage/Phase/Frequency
 - 8. Enclosure Type
 - 9. Frame Size
 - 10. Full-Load Current
 - 11. UL Label (where applicable)
 - 12. Lead Connection Diagram
 - 13. Bearing Data
 - 14. Efficiency at Full Load.

- F. Provide motors whose sound power levels do not exceed that recommended in NEMA MG 1-12.49.
- G. Motor Characteristics:
 - 1. 120V/1/60 Hz, 208V/1/60 Hz or 240V/1/60 Hz: Capacitor start, open drip-proof type, ball bearing, rated 40 C. continuous rise. Refer to schedules sheet for more information.

1.16 ACOUSTICAL PERFORMANCE OF EQUIPMENT AND SYSTEMS

- A. Install the Work in such a manner that noise levels from operation of motor driven equipment, whether airborne or structure-borne, and noise levels created by or within air handling equipment and air distribution and control media, do not to exceed sound pressure levels determined by the noise criteria curves published in the ASHRAE guide.
- B. Acoustical Tests
 - 1. Owner may direct the Contractor to conduct sound tests for those areas he deems too noisy.
 - 2. If NC level exceeds the requirements of the Contract Documents due to improper installation or operation of mechanical systems, make changes or repairs to bring noise levels to within required levels.
 - 3. Retest until specified criteria have been met.

1.17 OPERATING AND MAINTENANCE INSTRUCTIONS

- A. Instructions and Demonstration for Owner's Personnel
 - 1. Provide operating and maintenance instruction to the Owner when project is completed and all HVAC equipment serving the building is ready to be turned over to the Owner.
 - 2. Turn over the HVAC equipment to the Owner only after the final testing and proper balancing of HVAC systems.
 - 3. Instruct the Owner's personnel in the use, operation and maintenance of all equipment of each system.
 - 4. The above instruction requirements are in addition to that specified for specific equipment or systems. Conform to specified requirements if more stringent or longer instruction is specified for specific equipment or systems.

1.18 CODES, RULES, PERMITS & FEES

- A. Give all necessary notices, obtain all permits and pay all government sales taxes, fees, and other costs, in connection with the Work. Unless indicated otherwise, fees for all utility connections, extensions, and tap fees for water, storm, sewer, gas, telephone, and electricity will be paid directly to utility companies and/or agencies by the Owner. File all necessary plans, prepare all documents and obtain all necessary approvals of all governmental departments having jurisdiction; obtain all required certificates of inspection for the Work and deliver same to the Owner's Representative before request for acceptance and final payment for the Work.
- B. Conform to the requirements of the NFPA, NEC, FM, UL and any other local or State codes which may govern.

1.19 RECORD DRAWINGS

- A. During the progress of the Work, make a record set of drawings of all changes by which the actual installation differs from the Drawings.
- B. Create all record drawings in AutoCAD version 2014 or later in .dwg format. Upon completion of the Work, submit to the Architect/Engineer for approval three complete sets of hard copies of

the record drawings, of the same size as the Drawings for approval. Upon approval by the Architect/Engineer furnish the Owner a CD copy of the record drawings along with one hard copy for his records.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

3.01 CLEANING AND ADJUSTING

- A. Cleaning
 - 1. Blow out, clean and flush each system of piping and equipment, to thoroughly clean the systems.
 - 2. Clean all materials and equipment; leave in condition ready to operate and ready to receive final finishes where required.
 - 3. Clean the operating equipment and systems to be dust free inside and out.
 - 4. Clean concealed and unoccupied areas such as plenums, pipe and duct spaces and equipment rooms to be free of rubbish and dust.
- B. Adjusting
 - 1. Adjust and align equipment interconnected with couplings or belts.
 - 2. Adjust valves of all types and operating equipment of all types to provide proper operation.
 - 3. Clean all strainers after system cleaning and flushing and again before system startup.
- C. Lubrication
 - 1. Lubricate equipment as recommended by the manufacturer, during temporary construction use.
 - 2. Provide complete lubrication just prior to acceptance.
- D. Permanent Equipment Operating During Construction
 - 1. Use only in same service as the permanent applications.
 - 2. Use disposable filters during temporary operation.
 - 3. Replace expendable media, including belts used for temporary operation and similar materials just prior to acceptance of the Work.
 - 4. Repack packing in equipment operated during construction just prior to system acceptance, using materials and methods specified by the equipment manufacturer.
- E. Retouch or repaint equipment furnished with factory finish as required to provide same appearance as new.
- F. Tools
 - 1. Provide one set of specialized or non-standard maintenance tools and devices required for servicing the installed equipment.

3.02 EQUIPMENT BASES, PLATFORMS AND SUPPORTS

- A. Provide supporting platforms, steel supports, anchor bolts, inserts, etc., for all equipment and apparatus provided.
- B. Obtain prior approval for installation method of structural steel required to frame into building structural members for the proper support of equipment, conduit, etc. Welding will be permitted only when approved by the Architect/Engineer.

- C. Submit shop drawings of supports to the Architect/Engineer for approval before fabricating or constructing.
- D. Provide leveling channels, anchor bolts, complete with nuts and washers, for all apparatus and equipment secured to concrete pads and further supply exact information and dimensions for the location of these leveling channels, anchor bolts, inserts, concrete bases and pads.
- E. Where supports are on concrete construction, take care not to weaken concrete or penetrate waterproofing.

3.03 ACCESSIBILITY

- A. Install valves, dampers and other items requiring access conveniently and accessibly located with reference to the finished building.
- 3.04 USE OF EQUIPMENT
 - A. The use of any equipment, or any part thereof, even with the Owner's consent, is not an indication of acceptance of the Work on the part of the Owner, nor shall it be construed to obligate the Owner in any way to accept improper work or defective materials.
- 3.05 MODIFICATIONS OF EXISTING WORK
 - A. Coordinate the Work with all other contractors and provide necessary dimensions for all openings. Provide all cuts and openings which are necessary for the Work for passage of piping and ductwork
 - B. Upon completion, remove all temporary piping and equipment, shoring, scaffolds, etc., and leave all areas clean and free from material and debris resulting from the Work performed under this Section. Provide rough patching in areas required.

3.06 EQUIPMENT INSTALLATION

- A. Locate and set equipment anchor bolts, dowels and aligning devices for equipment requiring them.
- B. Level and shim the equipment; coordinate and oversee the grouting work.
- C. Perform field assembly, installation and alignment of equipment under direct supervision provided by the manufacturer or with inspections, adjustments and approval by the manufacturer.
- D. Alignment and Lubrication Certification for Motor Driven Apparatus
 - After permanent installation has been made and connections have been completed, but before the equipment is continuously operated, have a qualified representative of the equipment manufacturer inspect the installation and report in writing on the manufacturer's letterhead on the following:
 - a. Whether shaft, bearing, seal, coupling, and belt drive alignment and doweling is within the manufacturer's required tolerances so that the equipment will remain aligned in the normal service intended by the Contract Documents and that no strain or distortion will occur in normal service.
 - b. That all parts of the apparatus are properly lubricated for operation.
 - c. That the installation is in accordance with manufacturer's instructions.
 - d. That suitable maintenance and operating instructions have been provided for the Owner's use.

- e. Make any corrections to items that are required or recommended based on the manufacturer's inspection and have the equipment re-inspected.
- E. Belt Drives
 - 1. V-belt drives a driving and driven sheave grooved for belts of trapezoidal cross-section. Construct belts of fabric and rubber so designed so as not to touch the bottom of the grooves, the power being transmitted by the contact between the belts and V-shaped groove sides. Design drives for a minimum of 150 percent of motor horsepower. Provide companion type driven sheaves.
 - 2. Select drives to provide for 12-1/2 percent variation in speed, plus or minus, from specified speed. Provide all motors with adjustable sheaves except where indicated otherwise in the Specifications or on the Drawings.
 - 3. Install all fans with adjustable pitch sheaves on their drive motors. Select sheaves to provide air quantities under specified conditions. Put air systems into operation, and determine as a result of the completed air balance the actual size of sheaves required to produce specified air quantities on installed systems. The adjustable pitch sheaves shall then be replaced with the proper size fixed sheaves. Remove adjustable pitch sheaves from premises. Provide fixed motor sheaves manufactured by Wood's.
 - 4. Where indicated on the Drawings or specified, provide spare motor, bearings, and belts.
- F. Machinery Guards
 - 1. Protect motor drives by guards furnished by the equipment manufacturer or in accordance with the Sheet Metal and Air Conditioning Contractors National Association's Low Pressure Duct Manual. Provide guards of all types approved as acceptable under OSHA Standards.
- G. Equipment Start-up
 - 1. Require each equipment manufacturer to provide qualified personnel to inspect and approve equipment and installation and to supervise the start-up of the equipment and to supervise the operating tests of the equipment.
 - 2. If a minimum number of hours for start-up and instruction are not stated with the equipment specifications, these shall be 2 full 8-hour working days as a minimum.
 - 3. Advise Owner of start-up at least 72 hours in advance.

3.07 CLOSEOUT PROCEDURES

- A. General Operating and Maintenance Instructions: Arrange for each installer of operating equipment and other work that requires regular or continuing maintenance, to meet at the site with the Owner's personnel to provide necessary basic instructions in the proper operation and maintenance of the entire Work. Where installers are not expert in the required procedures, include instruction by the manufacturer's representatives.
- B. Where applicable, provide instruction and training, including application of special coatings systems, at manufacturer's recommendation.
- C. Provide a detailed review of the following items:
 - 1. Maintenance manuals
 - 2. Record documents and catalog cuts for each piece of equipment.
 - 3. Spare parts and materials
 - 4. Tools
 - 5. Lubricants
 - 6. Fuels
 - 7. Identification systems
 - 8. Control sequences
 - 9. Hazards
 - 10. Cleaning

- D. Warranties, bonds, maintenance agreements, and similar continuing commitments.
- E. Demonstrate the following procedures:
 - 1. Start-up
 - 2. Shut-down
 - 3. Emergency operations
 - 4. Noise and vibration adjustments
 - 5. Safety procedures
 - 6. Economy and efficiency adjustments
 - 7. Effective energy utilization.
- F. Prepare instruction periods to consist of approximately 50% classroom instruction and 50% "hands-on" instruction. Provide minimum instruction periods as follows:

Systems or Equipment	Training Time (Hours)
Fan Assemblies	4 hrs.
Heaters	4 hrs.
All other equipment	4 hrs. (each)

Note: Consult individual equipment specification sections for additional training requirements.

- G. Prepare a written agenda for each session and submit for review and approval. Include date, location, purpose, specific scope, proposed attendance and session duration.
- H. Record training sessions in digital format, format as selected by the Owner. Turn over digital files to the Owner after training has been completed.

1.01 DESCRIPTION OF WORK

- A. This Section describes the draining, disconnecting, dismantling, demolition, removal, relocation, rerouting and reconnection of existing mechanical facilities, in a neat and workmanlike manner, of mechanical systems, materials and accessories as required, as shown on the Drawings and specified herein, to accomplish alteration, restoration and to accommodate the Work.
- 1.02 RELATED WORK
 - A. General Mechanical Requirements Section 230010

1.03 REFERENCES

- A. NFPA Fire Code
- B. ANSI A10.6 Safety Requirements for Demolition
- C. National Association of Demolition Contractors (NADC) Demolition Safety Manual
- D. NFPA 51B Cutting and Welding Processes
- E. NFPA 70 National Electrical Code
- F. NFPA 241 Safeguarding Building Construction and Demolition Operations
- G. OSHA 29 CRF 1910 Occupational Safety and Health Standards
- H. US EPA Clean Air Act Amendment of 1990.

1.04 SUBMITTALS

- A. Demolition Schedule
- B. Fire Watch Procedures
- C. Welding/Burning Permit Obtain a welding/burning permit from the local Fire Official prior to the start of any welding or burning in accordance with the local Fire Code or as required by the Owner.

1.05 QUALITY ASSURANCE

- A. Only employ workers skilled in the specific trades involved for cutting, patching and removal.
- B. Job Conditions: Prior to start of the Work, make an inspection accompanied by the Architect/Engineer to determine physical condition of adjacent construction that is to remain.

1.06 SPECIAL PRECAUTIONS

- A. Do not torch cut ductwork.
- B. Torch cutting of other mechanical equipment will be permitted only with the specific written approval of the Architect/Engineer.

- C. Include "Fire Watch" procedures as required by the Fire Code and/or Owner's Fire Insurance Carrier for any cutting work that may produce sparks. Submit fire watch procedures for approval.
- D. Perform draining operations so that damage to existing building components does not occur.

PART 2 - PRODUCTS

2.01 GENERAL

A. Adequately sized rubbish containers for the proper and safe disposal of all debris.

PART 3 - EXECUTION

3.01 PREPARATION

- A. Construct temporary partitions enclosing respective work prior to any demolition work. Erect temporary fencing and signage around demolished materials.
- B. Protect existing materials and equipment which are not to be demolished.
- C. Prevent movement of structure; provide required bracing and shoring.
- D. Do not begin the work until the time schedules and manner of operations have been approved by the Architect/Engineer and Owner. Include all interruptions of existing services in schedules submitted for approval by the Architect/Engineer and Owner.

3.02 GENERAL

- A. Provide alteration and demolition of mechanical facilities as required by the Drawings and Specifications. The Drawings are diagrammatic and do not show the exact location of all existing mechanical work. Where existing equipment is to remain in service during construction, provide rerouting and reconnection of mechanical services as required to maintain continuous service.
- B. Review all equipment with the Architect/Engineer and Owner prior to disposal. Completely remove existing ductwork, piping, conduit and similar items to be abandoned that are not embedded in walls or floor slabs unless otherwise shown on the Drawings. Cap open ends at all walls and floors.
- C. Remove, store and protect all equipment or materials designated to be turned over to the Owner. Coordinate exact location of storage with the Owner.
- D. Temporarily cap ends of ductwork, piping and sanitary vent piping to avoid entry of dirt, debris, or discharge of foul odors and gases.
- E. Where existing louvers or ductwork penetrations are to remain, blank-off the opening on the inside with galvanized sheet metal on both sides of 2-inch thick, 6 pcf density rigid fiberglass board insulation. Paint side attached to the opening with weather resistant flat black paint.
- F. Do not close or obstruct egress width to exits.
- G. Do not disable or disrupt building fire or life safety systems without five (5) days prior written notice to the Architect/Engineer and Owner.
- H. Conform to procedures applicable when discovering hazardous or contaminated materials.

- I. Conduct demolition to minimize interference with adjacent building structures or Owner's operations.
- J. Cease operations immediately if structure appears to be in danger or hazardous materials are encountered. Notify Architect/Engineer. Do not resume operations until directed.
- K. Demolish in an orderly and careful manner. Do not cut or remove more than is necessary to accommodate the new construction or alteration.
- L. Remove demolished materials from site daily. Do not burn or bury materials on site. Dispose of all material at an approved disposal facility.
- M. Protect finished surfaces at all times and repair or replace, if damaged, to match existing construction to the satisfaction of the Architect/Engineer.

3.03 PROTECTION FROM FREEZING

- A. It is intended that the building remain protected from damage due to freezing temperatures. To that end, keep in place and in operation existing equipment and systems used for heating until scheduling permits shutdown.
- B. Where the removal of equipment, etc. will leave an area unprotected from freezing, notify the Owner and Architect/Engineer at least 72 hours in advance prior to removal so appropriate steps can be taken by the Owner to protect the area. Provide temporary heating equipment sufficient to prevent freezing.
- C. It is the Contractor's responsibility to ensure that piping systems that are being worked on are completely drained from water prior to the start of demolition. If water is not drained and the water freezes it is the Contractor's responsibility to replace piping and repair all damages caused by water leakage at his own expense.

3.04 DISCONNECTION AND INTERRUPTION OF MECHANICAL SERVICES

A. When portions of an existing piping system or ductwork system are removed, and this removal causes loss of operation to another piece of equipment due to open or disconnected piping or ductwork, cap piping or ductwork or provide temporary piping or ductwork system to retain operation of the system.

3.05 MECHANICAL EQUIPMENT REMOVAL

- A. Remove all mechanical equipment as shown on the Drawings. Remove all electrical work, including wiring between equipment, and wiring to power source or point of origin.
- B. Where equipment is supported by steel and/or structural supports, remove these supports.

3.06 INSULATION REMOVAL

- A. Remove insulation, together with all piping, fittings, valves and equipment designated for demolition.
- 3.07 CONTROL WIRING REMOVAL
 - A. Disconnect and remove all control wiring and tubing, including conduit, for the Automatic Temperature Control (ATC) System associated with equipment and systems to be removed.

1.01 DESCRIPTION OF WORK

- A. The Work specified as part of this Section consists of the work required to achieve operational and coordinated Sequences of Operation as described. Work includes coordination of functions of controllers supplied as part of equipment packages, sizing of control valves, interconnection of systems, provision and installation of all accessory devices required for complete system operation including devices not provided as part of equipment, coordination of start up and testing and demonstration of the operation of Sequences of Operation to the Owner and his representatives.
- B. The control system operation of all equipment shall be subject to the operational modes, conditions and logic described in this Section and the controlled equipment manufacturer's recommendations.
- C. Training of the Owner's personnel in the operation, trouble shooting, adjustment and repair of all system controls.
- 1.02 RELATED SECTIONS AND WORK
 - A. Division 26
 - B. Owner's Fire Alarm System (FAS)

PART 2 - PRODUCTS

NOT USED.

PART 3 - EXECUTION

3.01 GENERAL

- A. General
 - 1. Conform to the requirements of the Owner's standards for all electrical work and devices.
 - 2. All space sensors and thermostats shall have an lcd display indicating their set point, the condition sensed and the mode of operation they are responding to

3.02 SEQUENCE OF OPERATION - ELECTRIC UNIT HEATER, EUH-1

- A. General:
 - 1. The unit heater shall be provided with a remote, wall mounted digital thermostat.
- B. Heating:
 - 1. The heating set point temperature shall be 65 degrees (adj.). When the space temperature falls below the set point temperature, the unit heater shall turn on in order to maintain the set point temperature.

3.03 SEQUENCE OF OPERATION - EXHAUST FAN, EF-1

- A. General:
 - 1. The exhaust fan shall operate whenever the space temperature rises above the set point determined by the thermostat. The set point temperature shall be 85F (adj.).

1.01 DESCRIPTION OF WORK

A. Provide exhaust fans, as specified herein, of sizes and capacities scheduled and in locations shown on drawings.

1.02 REFERENCE CODES AND STANDARDS

- A. AMCA 99 Standards Handbook
- B. AMCA 210 Laboratory Methods of Testing Fans for Rating
- C. AMCA 300 Reverberant Room Method for Sound Testing of Fans
- D. ASHRAE Handbook, HVAC Applications Volume "Sound and Vibration Control"
- E. UL listed and labeled.

1.03 SUBMITTALS

- A. Shop Drawings Show fan layout, housing, materials, gauges, dimensions, weights and installation details
- B. Product data Manufacturer's fan performance (data includes cfm, rpm, bhp, motor nameplate data, tip speed, outlet velocity and static pressure) and sound performance (data includes sound power level ratings by octave bands) as tested in accordance with AMCA Standards 210 and 300.
- C. Fan performance curves Submit curves for all fans with system performance shown, and for plus or minus 10 percent and plus or minus 20 percent change in fan rpm. Curves shall include plotted rpm, horsepower, cfm, static pressure, and fan surge line and operating point.
- D. Certified AMCA Ratings Submit ratings for air and sound performance.
- E. UL Listing Submit listing if specified.

1.04 QUALITY ASSURANCE

- A. Factory balance each fan statically and dynamically, test run before shipment, and key fan wheel to fan shaft. Fans shall operate quietly and without pulsation or vibration. Conduct sound power level tests for each type fan at the factory in accordance with AMCA 300.
- B. Fans shall operate in the stable range of their performance curves.
- C. The fan external static pressures shown in the schedules are those required by the ductwork and apparatus, and do not include the internal and intake fan losses, inlet vanes or integral outlet dampers, inlet screens, outlet velocity heads or drive losses.
- D. Factory performance test each fan assembled in or as part of apparatus specified to be performance tested. Test shall display scheduled performance characteristics, using certified, calibrated testing instruments provided by the manufacturer of the apparatus.
- E. All fan performance ratings shall be based up on factory tests performed in accordance with AMCA 210. One fan of each type specified shall have actual factory performance tests performed prior to shipment. All fans shall be certified by AMCA and carry its seal.

PART 2 - PRODUCTS

2.01 DIRECT DRIVEN EXHAUST FANS

- A. General Description:
 - 1. Base fan performance at standard conditions (density 0.075 Lb/ft3)
 - 2. Normal operating temperature up to 130 Fahrenheit (54.4 Celsius)
 - 3. Applications include: intake or exhaust
 - 4. Each fan shall bear a permanently affixed manufacture's engraved metal nameplate containing the model number and individual serial number
- B. Wheel:
 - 1. Constructed of aluminum
 - 2. Statically and dynamically balanced in accordance to AMCA Standard 204-05
- C. Motors:
 - 1. AC Induction Motor
 - a. Motor enclosures: Open dripproof
 - b. Motors are permanently lubricated, heavy duty ball bearing type to match with the fan load and pre-wired to the specific voltage and phase
- D. Housing/Cabinet Construction
 - 1. Construction material: Galvanized
 - 2. Square design constructed of heavy gauge galvanized steel and shall include square duct mounting collars
 - 3. Housing and bearing supports shall be constructed of heavy gauge bolted and welded steel construction to prevent vibration and to rigidly support the shaft and bearing assembly.
- E. Housing Supports and Drive Frame:
 - 1. Housing supports are constructed of structural steel with formed flanges
 - 2. Drive frame is welded steel which supports the motor
- F. Disconnect Switches:
 - 1. NEMA rated: 1
 - 2. Positive electrical shut-off
 - 3. Wired from fan motor to junction box
- G. Options/Accessories:
 - 1. Dampers:
 - a. Types: Gravity and motorized (see schedules on Drawing M100 for more information)
 - b. Galvanized frames with prepunched mounting holes
 - c. Balanced for minimal resistance to flow
 - 2. Motor Cover:
 - a. Constructed of galvanized steel
 - b. Covers motor and drives for safety
 - c. Standard on unit specified with UL
- H. Fans shall be Model AER as manufactured by Greenheck or approved equal.

3.01 GENERAL

- A. Install fans, including all necessary structural supports and bracing as scheduled and located on the contract drawings in accordance with manufacturer's instructions and approved submittals.
- B. Connect duct to fans to allow for straight and smooth air flow.
- C. Provide flexible connections (minimum of 4") between fan and duct.
- D. Install fan level: +/- 5 degrees vertical. Final installation shall be free of all leaks from both fan and associated ductwork.
- 3.02 START-UP, TESTING, DEMONSTRATION
 - A. Start-up fans after checkout to insure proper alignment and phased electrical connections.
 - B. Test fans individually and as part of system.
 - C. Insure fans are properly interlocked with supply fans and with control system.
 - D. Demonstrate operation to Owner and instruct maintenance personnel in operation of equipment.

1.01 DESCRIPTION OF WORK

A. Electric Unit Heaters.

1.02 REFERENCES

A. Electric unit heaters shall meet the requirements of the National Electric Code (NEC) and shall be UL listed.

1.03 SUBMITTALS

- A. Submit under provisions of Section 013300 SUBMITTALS.
- B. Submit manufacturer's product data and installation instructions to Engineer.
- C. Submittal data shall include capacity and size of each heater and wiring instructions.

PART 2 - PRODUCTS

2.01 ELECTRIC UNIT HEATERS

- A. Electric unit heater shall be Model ASHU as manufactured by Stelpro or approved equal. Heater shall be suitable for horizontal or vertical mount. Refer to equipment schedule for mounting type and other information.
- B. Heater to be of the KW rating, voltage and phase specified in the schedule.
- C. Unit Casing: Unit shall have heavy gauge die-formed steel casing with a corrosion resistant finish. Top of casing shall have two threaded holes for threaded rod suspension. Bottom of casing shall have a hinged panel for service access to wiring and controls.
- D. Heating Elements: Aluminum-finned, copper clad steel sheath heating element. Elements shall have kilowatt rating as specified. Provide automatic reset linear thermal cut-out, capillary type, to provide protection over entire length of element areas.
- E. Fan Delay Control: Fan control shall delay fan start up of the fan motor until the heating elements have warmed up. It shall maintain motor operation air heating elements have been de-energized to dissipate residual heat.
- F. Motor and Fan: The motor shall be totally enclosed, continuous duty, with automatic resetting, thermal-overload protection. Propeller fan shall be directly connected to the motor shaft and be statically balanced. Motor mounted with rubber vibration absorbing material.
- G. Electrical: All units shall have built-in contactors and low voltage control circuit transformers to provide single-source power connection. Built-in fuse blocks and factory supplied fuses shall be installed on all models with a 208-volt single-phase power supply. Factory mounted disconnect switches shall be provided. A wiring diagram and grounding lug shall be included in each control compartment.
- H. Air Deflectors: Removable and adjustable horizontal air deflectors shall be furnished on all models.
- I. Thermostat: Each unit shall be furnished with a remote wall mounted, low voltage thermostat, range 40°F to 80°F. Thermostat shall be UL listed.

- J. Supports: Stainless steel hanger rods, double nuts, and ceiling/wall bracket.
- K. Provide other accessories as described on the contract drawings.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Install unit in accordance with manufacturer's published installation instructions.
- B. Do not install horizontal unit heaters closer than 12 inches to combustible materials in any direction.

1.01 SECTION INCLUDES

- A. Excavation and backfill for electrical work.
- B. Demolition of existing electrical systems.
- C. Primary power wiring and distribution system.
- D. Secondary power wiring and distribution system.
- E. Lighting, including lamps.
- F. Wiring devices.
- G. Electrical control systems and interlock wiring.
- H. Wiring for built-in equipment.
- I. Switchboards and switchgear.
- J. Distribution panels and switches.
- K. Instrumentation and Controls.

1.02 RELATED WORK

- A. Foundations and pads required for equipment furnished under this division of specifications.
- B. Field painting, except such painting as is required to maintain shop coat painting and factory finish painting.
- C. Flashing and sealing of conduits through outside walls.
- D. Cutting and patching for electrical work, except for errors and omissions under this Division.

1.03 QUALITY ASSURANCE

- A. It is understood that the rights and benefits given the Owner by the guarantees found in the technical specifications are in addition to and not in derogation of any rights or benefits found in the special and general provisions of the contract.
- B. Electrical equipment provided under this Division shall be turned over in operating condition. Instruction on further operation and maintenance shall be included in the operating and maintenance instructions.

1.04 REFERENCES

- A. Perform work in accordance with standards listed below. Where these specifications are more stringent, they take precedence. In case of conflict, obtain a decision from the Engineer.
 - 1. New York City Electrical Code (NYCEC)
 - 2. New York City FIre Code
 - 3. New York City Energy Conservation Code (NYCECC)
 - 4. New York City Building Code
 - 5. New York City Administrative Code

6. Applicable New York City Ordinances.

1.05 PERMITS AND FEES

- A. The Contractor shall obtain and pay for all permits, construction charges, fees, licenses, certificates, inspections and other use charges required in connection with the work.
- B. Such permits include, but are not limited to:
 - 1. Transportation and disposal of debris.
 - 2. New York City Department of Buildings (DOB), or a pre-approved electrical inspection agency.
 - 3. Road opening permits.

PART 2 - PRODUCTS

2.01 MATERIALS AND EQUIPMENT

A. All materials and equipment used in carrying out these specifications shall have UL listing and label. Specifications and drawings indicate name, type, or catalog numbers of materials and equipment to be used as standards. Proposals shall be based on these standards. Contractor may use materials and equipment equivalent to those specified, subject to Engineer's approval.

PART 3 - EXECUTION

3.01 COORDINATION

- A. Carefully examine specifications, drawings and project site to be thoroughly familiar with items which require electrical connections and coordination. Electrical drawings are diagrammatic and shall not be scaled for exact sizes.
- B. Notify other Contractors of any deviations or special conditions necessary for the installation of work. Interferences between work of various contractors to be resolved prior to installation. Work installed not in compliance with specifications and drawings and without properly checking and coordinating as specified above shall, if necessary, be removed and properly reinstalled without additional cost to the Owner. Engineer to be mediating authority in all disputes arising on project.
- C. Equipment shall be installed in accordance with manufacturer's recommendation. Where conflicts occur between contract documents and these recommendations, a clarification shall be requested of the Engineer for decision before preceding with such work.
- D. Insofar as it is possible to determine in advance, advise masonry tradesmen to leave proper chases and openings. Place all outlets, anchors, sleeves, and supports prior to pouring concrete or installation of masonry work. Should the Contractor neglect doing this, any cutting and/or patching required to be done is at this Contractor's expense.
- E. FIRE ALARM For any facilities that utilize an existing fire alarm system, the contractor shall coordinate with the owner and fire alarm monitoring company prior to removing or disabling any devices. It shall be the contractor's responsibility to provide fire watch as per the latest addition of the New York City Fire Code. The contractor shall provide fire watch for all areas of a facility while occupied and unoccupied when any device or part of the fire alarm system is de-activated or put into "test mode".

3.02 CUTTING AND PATCHING

A. Repair or replace routine damage caused by cutting in performance of work under this Division.

- B. Correct unnecessary damage caused due to installation of electrical work, brought about through carelessness or lack of coordination.
- C. Holes cut through floor slabs to be core drilled with drill designed for this purpose. All openings, sleeves, and holes in slabs to be properly sealed, fire proofed and waterproofed.
- D. Repairs to be performed with materials which match existing materials and to be installed in accordance with appropriate sections of these specifications.

3.03 TESTS

- A. On completion of work, installation shall be completely operational and entirely free from ground, short circuits, and open circuits. Perform a thorough operational test in presence of the Engineer. Balance all circuits so that feeders to panels are not more than 10% out of balance between phases with all available load energized and operating. Furnish all labor, materials and instruments for above tests.
- B. Furnish Engineer with a copy of such tests including identification of each circuit and readings recorded, as well as the main service ground resistance test as described in Section 260526 of these specifications. Test information to include ampere readings of all panels and major circuit breakers, isolation resistance reading of motors and transformers.

3.04 IDENTIFICATION OF EQUIPMENT

- A. Properly identify the following:
 - 1. Switchgear and switchboards, including all individual devices.
 - 2. Distribution panels.
 - 3. Disconnect switches.
 - 4. Individually mounted circuit breakers.
 - 5. Service entrance equipment and main circuit breaker.
 - 6. Transformers.
- B. Use permanently attached black phenolic plates with 1/4-inch white engraved lettering on the face of each, attached with two sheet metal screws.
- C. Panelboard identification plates shall indicate panel by name.

3.05 INSTALLATION

- A. The Contractor shall carefully move and replace existing equipment, appliances and all related items, as required to conduct proposed work.
- B. Install and conduct all work per applicable NEC, State and local codes.

1.01 SECTION INCLUDES

A. Electrical demolition.

1.02 SUBMITTALS

- A. Submit under provisions of Section 013300.
- B. Shop Drawings: Indicate demolition and removal sequence and location of salvageable items; location and construction of temporary work.

1.03 REGULATORY REQUIREMENTS

- A. Conform to applicable code for demolition work, safety of structure and dust control.
- B. Obtain required permits from authorities.
- C. Notify affected utility companies before starting work and comply with their requirements.
- D. Do not close or obstruct egress width to exits.
- E. Do not turn off electric equipment without authorization from Owner.
- F. Conform to procedures applicable when discovering hazardous or contaminated materials.
- G. Obtain a utilities mark-out of all buried underground utilities for telephone, electric, gas, sewer and water, including all customer owned utilities.

1.04 SCHEDULING

A. Schedule Work to coincide with new construction.

PART 2 - PRODUCTS

2.01 NOT USED.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Verify field circuiting arrangements at Building 275.
- B. Verify that abandoned wiring and equipment serve only abandoned facilities.
- C. Demolition drawings are based on visual field observation. Report discrepancies to the Engineer before disturbing existing installation.
- D. Beginning of demolition means installer accepts existing condition.
- 3.02 PREPARATION
 - A. Coordinate service outages with Owner and Owner's Representative.

B. Provide power, wiring and connections to maintain all existing power, control and telemetry systems in service during construction. When work must be performed on energized equipment or circuits, use personnel experienced in such operations.

3.03 DEMOLITION AND EXTENSION OF EXISTING ELECTRICAL WORK

- A. Remove, relocate, and extend existing installations to accommodate new construction, as indicated on drawings.
- B. Remove exposed abandoned conduit, including abandoned conduit above accessible ceiling finishes. Cut conduit flush with walls and floors, and patch surfaces.
- C. Disconnect abandoned outlets and remove devices. Remove abandoned outlets if conduit servicing them is abandoned and removed. Provide blank cover for abandoned outlets which are not removed.
- D. Repair adjacent construction and finishes damaged during demolition and extension work.
- E. Provide caps and filler plates/plugs for all openings in equipment and enclosures after removal of conduits.
- F. Maintain access to existing electrical installations which remain active. Modify installation or provide access panel as appropriate.
- G. Remove demolished materials from site as work progresses.
- H. Completely remove and dispose of all electrical power, control, and telemetry feeds including conduits, conductors, boxes and supports not scheduled to remain after new construction is tested and operational.
- I. Where existing devices and equipment are called to be removed, Contractor shall maintain circuit continuity to all existing devices and equipment remaining on that circuit. Contractor shall provide all required conduit, conductors and boxes as required.

3.04 CLEANING AND REPAIR

- A. Clean and repair existing materials and equipment which remain or are to be reused.
- B. Remove temporary work.

1.01 SECTION INCLUDES

- A. Wires and cables.
- B. In general, the wires and cables included under this Section shall include, but not be limited to, the following:
 - 1. 600V power and control cable
 - 2. Communication cables
- C. All conductors to be continuous from origin to panel or equipment termination without splices.

1.02 REFERENCES

- A. ANSI/NFPA 70 National Electric Code.
- B. NYCEC New York City Electrical Code.
- C. NECA Standard of Installations.
- D. ANSI / UL 2196 "Tests for Fire Resistive Cables" .
- E. CSA C22.2#124.
- F. UL Fire Resistance Directory.

1.03 SUBMITTALS

A. Submit product data under provisions of Section 013300.

1.04 QUALITY ASSURANCE

- A. Products used in the work of this Section shall be produced by manufacturers regularly engaged in the manufacturing, installing and servicing of similar items with a history of successful production acceptable to the Engineer as specified herein and in accordance with the General Conditions.
- B. Contractor shall submit the following information pertaining to the manufacturer(s):
 - 1. Complete literature, performance, and technical data describing the proposed equipment and listing of items made by the manufacturer.
 - 2. Location of closest service office from which this equipment shall be serviced.
 - 3. Location of closest parts inventory for item installation.

1.05 COORDINATION

- A. Coordination:
 - 1. Coordinate wire and cable required with the equipment being furnished by others for the satisfactory operation of the equipment or system.
 - 2. Review installation procedures under other sections and contracts and coordinate them with the work specified herein.
 - 3. Notify other Contractors in advance of the installation of the work included to provide them with sufficient time for installation and coordination of interrelated items that are included in their contracts and that must be installed in conjunction with the work included in this Section.

1.06 PROJECT CONDITIONS

- A. Verify that embedded conduit, in masonry and concrete, is installed as shown on the Drawings prior to the work being enclosed by others.
- B. The Contractor shall be present at all concrete pours made by the General Contractor.
- C. In general, conductor sizes are based on copper at 75°C.
- D. Wire and cable routing shown on Drawings is approximate unless dimensioned or specifically called for such as where conduit is to be embedded in concrete or masonry. Route wire and cable as required to meet project conditions and shall be routed above ceilings, directly under joists, in pipe trenches, where available, and in masonry. Where exposed conduit is permitted, it shall be run to maximize wall space.
- E. Field verify destination location to determine cable routing.
- F. Where wire and cable routing is not shown for proposed destination, determine exact routing and lengths required. Routing shall be reviewed with the Engineer.

PART 2 - PRODUCTS

- 2.01 GENERAL USE LOW VOLTAGE CONDUCTORS
 - A. Install products in accordance with manufacturer's recommendations.
 - B. Single copper conductors with 600-volt insulation.
 - C. Minimum size of feeder and branch conductors and grounds shall be No. 12 AWG.
 - D. Insulation: ANSI/NFPA 70, Type THWN-2 for conductors installed on interior of building. Provide ANSI/NFPA 70, Type XHHW-2 for conductors installed on exterior.
 - E. Use solid conductor for feeder and branch circuits, 10 AWG and smaller.
 - F. All conductors shall include complete set of manufacturer's markings for insulation and conductor size.
 - G. Manufacturers shall be GENERAL CABLE, SOUTHWIRE, OKONITE, or approved equal.
 - H. Provide white colored neutral conductors; provide black, color coded phase conductors; provide green colored ground conductors.

2.02 4-PAIR CATEGORY 6 UNSHIELDED TWISTED PAIR CABLE

- A. Manufacturers: Subject to compliance with project requirements, manufacturers offering Products which may be incorporated in the Work include the following:
 - 1. Belden Corporation, Carmel, IN (800) 246-2673.
 - 2. Avaya, Basking Ridge, NJ (800) 344-02232.
 - 3. Berk-Tek, Incorporated, New Holland, PA (800) 237-5835.
- B. Conductors: 4 twisted pair 24 AWG, solid copper w/ RJ-45 connector ends
 - 1. Individually insulated plenum rated conductors under common plenum rated sheath unless entire cable is installed within conduit/EMT or if area where cable is installed is not considered a return air plenum according to any applicable codes.

- 2. Complies with individual characteristics established in ANSI/TIA/EIA-568-B, and all addendums for Category 6 cable performance specification.
- 3. Overall Nominal Diameter: .365 x .165 in.
- 4. Nominal Impedance: 100 ohms plus or minus 15 percent.
- 5. Certified capable of performing to minimum 350 MHz.
- C. Mechanical Characteristics
 - 1. Operating temperature: -20°C to +80°C
 - 2. Bulk cable weight: 29 lbs./1000 ft.
 - 3. Maximum recommended pulling tension: 45 lbs.
 - 4. Minimum bend radius: 1 in.
- D. Flame test: UL1666 Riser
- E. Electrical Characteristics:
 - 1. Nom. Mutual Capacitance @ 1 KHz 15.0 pF/ft
 - 2. Maximum Capacitance Unbalance (pF/100 m) 49.2 pF/100 m
 - 3. Nominal Velocity of Propagation 70 %
 - 4. Maximum Delay (ns/100 m) 510 @ 100MHz ns/100 m
 - 5. Maximum Delay Skew (ns/100m) 25 ns/100 m
 - 6. Maximum Conductor DC Resistance @ 20 Deg. C 9 Ohms/100 m
 - 7. Maximum DCR Unbalance @ 20 Deg. C 3 %
 - 8. Max. Operating Voltage UL 300 V RMS
- 2.03 MECHANICAL CONNECTORS
 - A. Conductor tapping connectors shall be BURNDY Servit split bolt, Series KS and KS3, or approved equal.
 - B. Split bolt connectors shall use BURNDY Type SC Servit cover on indoor applications.
 - C. Terminal lugs shall be BURNDY Universal Terminal Series. Terminal lugs shall be sized for proper ampacity and proper number of conductor holes. Each conductor shall occupy only one hole on a terminal lug.
 - D. Conductor tapping connectors for multiple conductors shall be BURNDY Series V-Tap with V-Tap covers, and V-Blok mounting platforms.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. General:
 - 1. Make terminations in accordance with cable manufacturers instructions for the particular type of wire and cable.
 - 2. Splices are not allowed in the underground duct and manhole systems. If splices are required, the Contractor shall obtain approval in writing from the Engineer prior to splicing.
 - 3. All splices shall be in made in terminal boxes.
- B. Wire and Cable Sizes: The sizes of wire and cable shall be as shown on the Contract Drawings, or if not shown, as approved by the Engineer. Minimum size wire shall be No. 12 AWG for all power, lighting and receptacle circuits. Wires for control circuits shall be No. 14 AWG minimum. Wire for instrumentation circuits shall not be smaller than No. 16 AWG. If due to field routing the voltage drop exceeds 2.5%, the size of conductors shall be increased such that 2.5% is the maximum voltage drop incurred.

- C. Number of Wires: The number of wires indicated on the Contract Drawings for the various control, indications, and metering circuits were determined for general schemes of control and for particular indication and metering systems. Coordinate wiring schemes with equipment schematics.
- D. Wiring Identification: All wiring shall have a unique wire number and be labeled at both ends. Wire numbers shall correspond with the equipment terminal wire numbers. Where no wire numbers are indicated, the Contractor shall assign wire numbers. Wire numbers shall not be duplicated.
- E. Cable Identification Tags: The Contractor shall furnish all labor and materials and affix in a permanent way to each cable in manholes, cable compartments and vaults, junction boxes, pull boxes and points of termination, a laminated plastic tag, bearing clearly printed, the cable number indicated on the Contract Drawings or other approved identification number or symbol. All cables shall be temporarily tagged with its full ID number immediately after it has been pulled.
- F. Wiring Supplies: Only electrical wiring supplies manufactured under high standards of production and meeting the approval of the Engineer shall be used. Friction tape shall be in accordance with ASTM D69.
- G. Training of Cable: Furnish all labor and material required to train cables around cable vaults within buildings and in manholes in any outdoor underground duct system. Sufficient length of cable shall be provided in each manhole and vault so that the cable can be trained and racked in an approved manner. In training or racking, the radius of bend of any cable shall be not less than the manufacturer's recommendation. All manhole cables shall be arc and fireproofed.
- H. Pulling Temperature: Cable shall not be flexed or pulled when the temperature of the insulation or of the jacket is such that damage will occur due to low temperature embrittlement. When cable will be pulled with an ambient temperature within a three day period prior to pulling of 40°F or lower, cable reels shall be stored during the three day period prior to pulling in a protected storage with an ambient temperature not lower than 55 degrees F and pulling shall be completed during the work day for which the cable is removed from the protected storage.
- I. All cables and wires shall be installed within the raceways as shown on the Contract Drawings. They shall be carefully handled so as to avoid twists or kinks in the conductors or damage to the insulation.
- J. The Contractor shall ensure that the manufacturer's recommended cable bending radii and pulling are not exceeded and that the number of conductors permitted in a conduit are in accordance with the latest applicable section of NFPA 70 National Electrical Code.
- K. No splices shall be permitted between terminals except at approved junction or terminal boxes. Boxes shall be provided as shown on the Contract Drawings or as required by Code for the pull lengths. No more than two terminations shall be made at each terminal point. Cable and wire runs shall be looped through pull boxes without cutting and splicing where possible. All splices below grade, in manholes, hand holes and wet locations shall be water proofed.
- L. No splicing of instrument wiring shall be permitted. Instrument wiring shall be extended by use of field termination boxes employing labeled terminal strips. Shield continuity shall be maintained. Ultimate shield termination (ground) shall be at one end only.
- M. Cables shall be installed complete with proper terminations at both ends. For each motor circuit, Contractor shall ensure proper phase sequence and motor rotation.

- N. Wire and cable contained within a single conduit shall be pulled simultaneously using insulating pulling compounds containing no mineral oil.
- O. Pulling tension on medium voltage cables shall be continuously monitored using a calibrated Dynamometer type device, having a calibration label within six months of its use.
- P. Cables shall be installed with maximum slack at all terminal points, boxes, and manholes.
- Q. Color Coding:
 - 1. Conductor jacket shall be color coded as follows:

AC POWER

480V/277 Volt 3 phase	208Y/120 Volt 3 phase (PSEGLI)	208Y/120 Volt 3 phase (NEC)	240/120 Volt 3 phase (PSEGLI)	240/120 Volt 3 phase (NEC)
Phase A	Phase A	Phase A	Phase A	Phase A
Brown	Blue	Black	Blue	Black
Phase B	Phase B	Phase B	Phase B	Phase B
Orange	Black	Red	Black	Orange (HiLeg)
Phase C	Phase C	Phase C	Phase C	Phase C
Yellow	Red	Blue	Orange	Blue
Neutral	Neutral	Neutral	Neutral	Neutral
White	White	White	White	White
Ground	Ground	Ground	Ground	Ground
Green	Green	Green	Green	Green

2. Control (Per ICEA Method 1, K-2):

WIRE NUMBER	COLOR		
1	Black		
2	Red		
3	Blue		
4	Orange		
5	Yellow		
6	Brown		
7	Red With Black		
8	Blue With Black		
9	Orange With Black		
10	Yellow With Black		
11	Brown With Black		
12	Black With Red		
13	Blue With Red		
14	Orange With Red		
15	Yellow With Red		
16	Brown With Red		
17	Black With Blue		
18	Red With Blue		
19	Orange With Blue		

3. DC Power

- a. Positive Lead RED
- b. Negative Lead BLACK
- 4. Equipment Ground GREEN
- R. Communication Cable Installation:
 - 1. Where instrumentation cables are installed in panels, etc., arrange wiring to provide maximum clearance between cables and other conductors. Communication cables shall not be installed in same bundle with conductors of other circuits.
 - 2. Special communication cable shall be as specified or recommended by the vendor of the equipment or instruments requiring such wiring. Installation, storage, terminations, etc., shall be per manufacturer's recommendations.

3.02 IDENTIFICATION

- A. Each wire shall be labeled at each termination point and each splice location. Carry individual conductor or circuit identification throughout, with circuit numbers or other identification stamped on terminal boards when provided or the cable so it is visible around the cable's circumference.
- B. Each wire shall be identified in junction boxes, cabinets, and terminal boxes. Where no termination is made, use a plastic-coated, self-adhesive, wire marker. Where termination is made, use a plastic, pre-printed sleeve wire marker. Paper, self-adhesive wire markers shall not be used.
- C. In manholes, each power wire shall be identified by a laminated plastic tag located so that it can be seen from center of manhole without moving adjoining wires. Bundle and mark control wires as listed in cable and conduit schedule.

3.03 FIELD TESTING

- A. After installation, all 600 volt and below wire and cable shall be field tested. The field tests shall be performed by the Contractor who shall furnish all testing equipment. The field tests shall be witnessed by the Engineer and certified by the Contractor. The Contractor shall provide a report identifying the tests performed and the results obtained.
- B. Each electrical circuit shall be tested after permanent cables are in place to demonstrate that the circuit and equipment are connected properly and will perform satisfactorily and that they are free from improper grounds and short circuits. The tests shall consist of the following:
 - 1. 600 volt wire and cable mechanical connections shall be individually tested after installation and before they are put in service with a calibrated torque wrench. Values shall be in accordance with manufacturer's recommendations.
 - 2. 600 volt and below wire and cables shall be individually tested for insulation resistance between phase and from each phase to ground. Test after cables are installed and before they are put in service with a Megger for one minute at a voltage rating recommended by the cable manufacturer or in accordance with NEMA and ICEA standards.
 - 3. The insulation resistance for any given conductor shall not be less than the value recommended by the cable manufacturer or in accordance with NEMA and ICEA standards. Any cable not meeting the recommended value or which fails when tested under full load conditions shall be replaced with a new cable for the full length.
 - 4. Shielded instrumentation cable shields shall be tested with an ohmmeter for continuity along the full length of the cable and for shield continuity to ground.
 - 5. Connect Shielded instrumentation cables to a calibrated 4-20 milliamp DC signal transmitter and receiver. Test at 4, 12, and 20 milliamp transmitter settings.

3.04 FIELD QUALITY CONTROL

A. Perform field inspection and testing under provisions of Section 014500.

- B. Inspect wire and cable for physical damage and proper connection.
- C. Measure tightness of bolted connections and compare torque measurements with manufacturer's recommended values. Adjust accordingly to meet recommended values.
- D. Field Testing:
 - 1. Wires and cables shall be tested before being connected to motors, devices or terminal blocks.
 - 2. If tests reveal defects or deficiencies, the Contractor shall make the required repairs or shall replace the cable as directed by the Engineer, without additional cost to the Owner.
 - 3. All tests shall be made by and at the expense of the Contractor who shall supply all testing equipment.
- E. Continuity Tests: All cables, wires and shields shall be tested for continuity. Testing for continuity shall be by test light or buzzer.
- F. Insulation-Resistance Tests:
 - 600V power and control cables and wires shall be tested for their insulation-resistance values. Test shall utilize a megohmmeter with applied voltage to be 1000VDC for one (1) minute. Insulation-resistance test shall be performed on each conductor with all other conductors grounded. The resistance value shall be 20 megohms or greater.

3.05 TYPE MI CABLE EXECUTION

- A. EXAMINATION
 - 1. Verify that the factory installed temporary end seals are intact.
 - 2. Verify that no moisture has entered cable insulation.
- B. STORAGE
 - 1. Cables shall be shipped from the manufacturer with ends sealed against moisture.
 - 2. Protect the exposed cable ends with shrinkable, molded polyolefin end caps or other suitable means such as standard conduit sealing compound and PVC tape.
 - 3. Cable shall be stored in a clean dry location.
- C. HANDLING
 - 1. Cable shall be uncoiled by rolling or rotating supply reel.
 - 2. Take precautions necessary to prevent damage to cable from contact with sharp objects, such as when pulled over foreign material on sheaves.
- D. INSTALLATION
 - 1. The wiring cable shall be installed according to the manufacturer's recommendations, the instructions in the Installation Specification or Manual and the requirements of the UL Fire resistance Directory listing.
- E. FIELD QUALITY CONTROL
 - 1. Inspect cable for physical damage and proper connection.
 - 2. Measure tightness of any bolted connections and compare torque measurements with manufacturer's recommended values.
 - 3. Verify continuity of each conductor.
 - 4. Prior to energizing cables, measure insulation resistance of each cable. Tabulate and submit for approval.
 - 5. Provide certification from cable manufacturer that installation is in accordance with their requirements.

1.01 SECTION INCLUDES

- A. Grounding electrodes and conductors.
- B. Equipment grounding conductors.
- C. Bonding.

1.02 REFERENCES

- A. ANSI/NFPA 70 National Electric Code.
- B. NYCEC New York City Electrical Code.

1.03 REGULATORY REQUIREMENTS

- A. Conform to requirements of ANSI/NFPA 70 and NYCEC.
- B. Furnish products listed and classified by Underwriters Laboratories, Inc.

PART 2 - PRODUCTS

2.01 COMPONENTS

- A. Ground clamps: OZ ELECTRICAL MANUFACTURING COMPANY, Type "CG", or equal by STEEL CITY or APPLETON.
- B. Raceways, conductors, outlet boxes, pull and junction boxes to be furnished in accordance with applicable sections of these specifications.
- C. Rod Electrode: Copper, 3/4-inch diameter, 10 feet long.
- D. Wire: Copper, sized to meet NFPA 70 requirements.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. General:
 - 1. Clean all conductive surfaces on equipment to be grounded, to assure good electrical continuity.
 - 2. Effectively bond all grounding conductors to grounding rod electrodes, equipment enclosures and ground busses.
 - 3. Locate all grounding attachments away from areas subject to physical damage. Provide protective covering as required.
 - 4. Install service entrance building ground as per NYCEC requirements.
 - 5. Service entrance shall be bonded to street side of first flange or coupling of incoming main water line with heavy duty ground clamp. Bonding conductor to be sized in accordance with NYCEC.
 - 6. Building steel shall be bonded to ground bus on main service with a conductor the same size as in B.1 below.
 - 7. Install new service grounds and grounding systems for new service as per NYCEC requirements.

B. Feeder/Branch Circuits:

switching neutrals.

- 1. All circuits shall have a separate green grounding conductor in conduit sized in accordance with NYCEC. Minimum size of conductor shall be No. 12 AWG.
- 2. Flexible conduit will not be approved as achieving continuity of ground. All flexible conduit to have a jumper wire sized to ampacity of branch breaker and to be connected to conduit system on both ends; this applies to fixtures, motors, controls, etc.
- C. Transformers:

8.

1. Transformers shall be grounded and grounding conductors and conduits sized in accordance with NYCEC.

3.02 TEST

A. Test ground on main service. Ground system resistance shall be no greater than 10 ohms using test equipment similar to a "Biddle" test. Test data to be submitted to the Engineer for approval and such approved test data to become a part of the Record Documents.

1.01 SECTION INCLUDES

A. System of supporting devices and hangers for support or bracing for conduit, electrical equipment, safety switches, fixtures, panelboards, outlet boxes, junction boxes and cabinets.

1.02 REFERENCES

- A. ANSI/NFPA 70 National Electric Code.
- B. NYCEC New York City Electrical Code.

1.03 REGULATORY REQUIREMENTS

- A. Conform to requirements of ANSI/NFPA 70 and NYCEC.
- B. Furnish products listed and classified by Underwriters Laboratories, Inc.

PART 2 - PRODUCTS

2.01 EQUIPMENT REQUIREMENTS

- A. Provide appropriate corrosion-resistant supporting devices and hangers for electrical equipment, as manufactured by ERICO PRODUCTS, INC., CADDY FASTENERS, STEEL CITY, MINERALLAC or equivalent.
 - 1. "Z" purlin clips.
 - 2. Conduit clips.
 - 3. Beam clamps (universal and vertical flange).
 - 4. Beam clamps (set screw type).
 - 5. Combination push-in conduit clips.
 - 6. Combination conduit hanger clamps.
 - 7. Flexible conduit clips.
 - 8. Special combination conduit clips.
 - 9. One hole steel straps.
 - 10. Conduit hangers.
- B. Provide materials, sizes and types of anchors, fasteners and supports to carry the loads of equipment, wire in conduit and conduit.

2.02 CHANNEL SUPPORT SYSTEM

- A. Channel systems and supports shall be manufactured by KINDORF/THOMAS & BETTS, or approved equal.
- B. Channels shall be 1-1/2" x 1-1/2".
- C. Channels and all associated accessories and bolts shall be hot dipped galvanized.
- D. Channels shall have 9/16" bolt holes on 1-1/2" centers.
- E. Provide end caps for all channels.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Secure conduits to within 3 feet of each outlet box, junction box, cabinet, fitting, etc., and at intervals not to exceed 10 feet in accordance with currently effective edition of the National Electric Code.
- B. In seismic zones, support conduits 1 inch and smaller at 6 foot intervals.
- C. Install clamps secured to structure for feeder and other conduits routed against structure. Use drop rods and hangers to support conduits run apart from the structure.
- D. Provide and install suitable angle iron, channel iron or steel metal framing with accessories to support or brace electrical equipment including safety switches, fixtures, panelboards, etc.
- E. Provide concrete anchors and associated accessories where indicated on drawings and where required to securely mount supporting devices and equipment to existing and new concrete structure.
- F. Paint all supporting metal not otherwise protected, with rust inhibiting primer and then with a finish coat if appropriate to match the surrounding metal surfaces. Prepainted or galvanized support material is not required to be painted or repainted, unless cut to specific size in field in which case exposed edge(s) shall be painted.
- G. Do not use chains, perforated iron, baling wire or tie wire for supporting conduit runs. Use of clips to support conduit to top of t-bar ceiling grid will not be permit-ted.
- H. Obtain permission from Engineer before drilling or cutting structural members.
- I. Install surface mounted cabinets and panelboards with a minimum of four anchors, or as recommended by equipment manufacturer.
- J. Do not fasten supports to pipes, ducts, mechanical equipment and conduit.
- K. Install products in accordance with manufacturer's instructions.

1.01 SECTION INCLUDES

- A. Conduit system with associated couplings, connectors and fittings. Conduits to be mechanically and electrically continuous from outlet to outlet and from outlets to cabinets, pull or junction boxes.
 - 1. Conduit Use Rigid Galvanized Conduit:
 - a. All interior circuits including concrete encased vertical riser for interior primary feeders.
 - 2. Conduit Use PVC Sch. 40:
 - a. For use within exterior concrete encased duct banks only.
 - 3. Conduit Use Flexible Liquid-tight Metal Conduit:
 - a. Connecting motors, generators and other equipment subject to vibration, maximum length 3 feet.
 - b. Passing through building expansion joints.
- B. Device Boxes: Provide each fixture switch, receptacle and other wiring device with a box of appropriate size and depth for its particular location use unless indicated otherwise.
- C. Pull boxes, junction boxes and wire troughs

1.02 REFERENCES

- A. ANSI C80.1 Rigid Steel Conduit, Zinc Coated.
- B. ANSI/NFPA 70 National Electric Code.
- C. NYCEC New York City Electrical Code.
- D. NECA Standard of Installation.
- E. ANSI/NEMA FB 1 Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit and Cable Assemblies.
- F. NEMA TC 3 PVC Fittings for use with Rigid PVC conduit and tubing.
- G. ANSI/NEMA OS1 Sheet-steel outlet boxes, device boxes, covers and box supports.
- H. NEMA 250 Enclosures for electrical equipment (1000 volts maximum).

1.03 SUBMITTALS

- A. Submit product data under provisions of Section 013300.
- B. Conduit routing and box locations:
 - 1. Submit for review and comment scaled working drawings showing proposed routing of all conduits, inclusive of conduits routed above and/or below grade on interior and/or exterior, and embedded in structural concrete. Drawings shall show locations of all pull and junction boxes and all penetrations in walls and floor slabs.
 - 2. Contractor shall not proceed with installation of any cable, conduit, raceway, boxes, etc. until written approval is received from Owner and Engineer.
- C. Structural Design Calculations:

- 1. Submit for review and comment construction details of conduit racks and other conduit support systems with seismic restraint details and calculations signed and sealed by a NYS Licensed Professional Engineer.
- 2. Perform structural design calculations for all conduit and boxes supported from existing and new structure. Submit proposed mounting and attachment methods signed and sealed by NYS Licensed Professional Engineer for review and approval.
- 3. Structural design calculations sealed by a P.E. registered in the State of New York. Design calculations for manholes shall include confirmation structures adequately resist flotation when they are totally empty and subjected to groundwater full height of structure.

1.04 REGULATORY REQUIREMENTS

- A. Furnish products listed and classified by Underwriters Laboratories, Inc.
- B. Conform to requirements of ANSI/NFPA 70, NEC, NYCEC.
- 1.05 PROJECT RECORD DOCUMENTS
 - A. Submit under provisions of Section 017839.
 - B. Accurately record actual routing of all conduits.

1.06 FIELD SAMPLES

- A. Provide under provisions of Section 014500.
- B. Provide field sample of conduit two each at 2 feet in length.
- C. Provide field sample of expansion/deflection fitting, two each.

1.07 DELIVERY, STORAGE AND HANDLING

- A. Deliver, store, protect, and handle products in accordance with manufacturers' recommendations.
- B. Accept conduit on site. Inspect for damage.
- C. Protect conduit from corrosion and entrance of debris by storing above grade. Provide appropriate covering.

1.08 PROJECT CONDITIONS

- A. Verify all conduit routings by field measurements.
- B. Verify routing and termination locations of conduit prior to rough-in.
- C. Conduit routing is shown on Drawings in approximate locations unless dimensioned. Route as required to complete wiring system. Provide all required sweeps, boxes and fittings.

PART 2 - PRODUCTS

- 2.01 RIGID GALVANIZED CONDUIT
 - A. Rigid conduit shall be hot dipped, galvanized, or electro-galvanized steel by WHEATLAND, ALLIED, O-Z/GEDNEY or approved equal.

- B. Associated couplings, connectors and fittings shall be as manufactured by THOMAS & BETTS CORP., ALLIED, O.Z. GEDNEY CO., WHEATLAND, or approved equal. Catalog numbers used below are those of THOMAS & BETTS CORP. based on 3/4-inch size and are considered standards by which equivalents are to be judged.
- C. ERICKSON couplings, Series 676 or approved equal, shall be used where neither length of conduit can be rotated.
- D. Conduit connectors shall be threaded type. Set screw and compression type connections ARE NOT acceptable.
- E. Sealing fitting locknuts shall be Series 142SL.
- F. Steel or malleable iron insulated bullet hub, Series 370-379, complete with sealing "O" ring. DO NOT use "die cast" material.
- G. Entrance ells shall be Series 1491 or approved equal.
- H. Combination coupling shall be Series 531 for connecting rigid galvanized conduit to electrical metallic tubing.
- 2.02 EXPANSION AND DEFLECTION FITTINGS:
 - A. Expansion and deflection fittings shall be made up of non-corrodible parts and shall provide for ample longitudinal and lateral movement. A suitable bond shall provide a low resistance, continuous longitudinal path for ground currents.
 - B. Expansion and deflection fittings shall be watertight cast iron, malleable iron or hot dipped galvanized. Fittings shall be corrosion-resistant, UL listed and compatible with the conduit system.
 - C. Expansion /deflection fittings shall provide both expansion and deflection in a single fitting in accordance with the following:
 - 1. Axial expansion or contraction up to 3/4-inch.
 - 2. Angular misalignment up to 30 degrees.
 - 3. Parallel misalignment up to 3/4-inch.
 - D. Expansion fittings shall provide expansion /contraction with eight inch total movement.
 - E. Expansion and deflection fittings shall be by Crouse Hinds, Appleton Electric or equal to be approved by the Engineer.
- 2.03 CONDUIT BUSHINGS:
 - A. Conduit bushings shall be insulated, grounding type with lay-in-lug connection. Two locknuts shall be provided for each bushing.
 - B. The conduit bushing and locknuts shall be steel, malleable iron or zinc. The bushing shall include a 90 degree C insulating surface.
 - C. Conduit bushings and locknuts shall be by 0-Z Gedney, Thomas and Betts or equal to be approved by the Engineer.

D.

2.04 PVC CONDUIT

- A. PVC conduit shall be manufactured by ALLIED, CANTEX, CARLON or approved equal.
- B. Description: NEMA TC 2; Schedule 40 PVC. For installation within concrete encased duct bank only.
- C. Fittings and Conduit Bodies: NEMA TC3.

2.05 DUCT SEAL

- A. Duct seal shall be a soft, fibrous non-hardening sealing compound for sealing between cables and conduits.
- B. Duct seal shall be by O-Z Gedney, Ideal Industries or equal to be approved by the Engineer.

2.06 THRUWALL SEALS AND BUSHINGS:

- A. Thruwall seals and bushings shall be in accordance with the following:
 - 1. For conduits and cables in new construction and passing through exterior subsurface walls and exterior concrete walls, thruwall seals shall be used. Thruwall seals shall be Type WSK and WSCS manufactured by O-Z/Gedney or equal to be approved by the Engineer.
 - 2. For conduits and cables in new construction and passing through concrete floors and floor slabs, floor seals shall be used. Floor seals shall be type SK and FSCS manufactured by O-Z/Gedney or equal to be approved by the Engineer.
 - 3. For conduits passing through exterior block walls or installed in existing construction passing through exterior subsurface walls, exterior concrete walls, floor slabs and roof slabs for use in core bit-drilled holes sealing bushings shall be used. Sealing bushings shall be Type CSMI at the inside of the structure and Type CSMC at the outside of the structure, within the same core drilled hole. Sealing bushings shall be manufactured by O-Z/Gedney or equal to be approved by the Engineer.
 - 4. For conduits passing through existing interior concrete walls or floors and interior block walls sealing bushings shall also be used. Sealing bushings shall be CSMC or CSMI type as manufactured by O-Z/Gedney or equal to be approved by the Engineer.
 - 5. For conduits passing through fire rated floors and walls fire stop fittings shall be used. Fire stop fittings shall be CFS and/or CFSI type as manufactured by O-Z/ Gedney or equal to be approved by the Engineer.
 - 6. For multiple conduit runs passing through interior or exterior and fire rated walls thru- wall barriers shall be used. Thru- wall barriers shall be TW series by Crouse-Hinds or equal to be approved by the Engineer.

2.07 FLEXIBLE LIQUID-TIGHT METAL CONDUITS AND FITTINGS

- A. Liquid-tight flexible metal conduit shall be ANACONDA or approved equal.
- B. Description: Interlocked steel construction with PVC jacket.
- C. Provide flexible liquid-tight conduits and fittings as manufactured by THOMAS & BETTS CORP., O.Z. GEDNEY CO. or approved equal. Catalog numbers used below are those of the THOMAS & BETTS CORP., based on 3/4" size and are to be considered as standards by which equivalents are to be judged. All conduit shall be liquid-tight flexible type, UL type UA, or suitable for exposure to continuous or intermittent moisture.
- D. Flexible liquid-tight connectors shall be Series 5333 or approved equal.

2.08 OUTLET AND DEVICE BOXES

- A. Acceptable Manufacturers: Raco, O-Z/Gedney, Cooper, Appleton, or approved equal.
- B. Sheet Metal Outlet Boxes All concealed boxes shall be NEMA OSI, galvanized steel:
 1. Luminaire and Equipment Supporting Boxes: Rated for weight of equipment supported. Provide 1/2" male fixture stubs where required.
- C. Concrete Ceiling Boxes: Concrete type.
- D. Cast Boxes: All exposed surface mounted boxes shall be NEMA FB1, Type FD, cast feralloy. Provide gasketed cover by box manufacturer.

2.09 ELECTRICAL MANHOLES

- A. Manholes shall be pre-cast type of reinforced concrete.
- B. Concrete for manholes shall be Class 40 concrete in accordance with related sections of these specifications. Manholes shall be constructed to withstand ground water pressure when completely submerged by rising water table.
- C. Steel reinforcement shall be as shown on the details on the Contract Drawings and in accordance with related sections of these specifications.
- D. Manholes shall have dimensions as shown on the Contract Drawings, as required by the current applicable edition of the National Electrical Code (NEC) and New York City Electrical Code (NYCEC), and shall be provided with all duct entrances sized and located to suit duct banks.
- E. Concrete floor shall be sloped towards the drain sump at the center of each manhole.
- F. All manhole hardware shall be hot dipped galvanized steel.
- G. Minimum structural design loading for manholes shall be as indicated in ASTM C857, unless otherwise noted herein.
- H. Walls of manholes shall be designed for a minimum vertical surcharge of 100 psf.
- I. Manholes shall be designed to resist floatation when totally empty and subjected to groundwater full height of manhole.
- J. Manholes shall be waterproofed using waterproofing membrance sealant: ConSeal or approved equal.
- K. Manhole Covers:
 - 1. Manholes shall be designed for H-20 traffic loading and be provided with H-20 Cast-Iron Watertight Traffic Load Cover. Covers shall be annealed, high quality, gray cast iron, free from blowholes, sandholes, scabs, fins, scales and other defects. They shall be uniform in form and dimensions, and shall be approved by the Engineer.
 - 2. The frames of the covers shall be set so that the completed installation will provide a proper alignment of the outside covers with the roadeways or other surrounding areas. Manhole covers shall fit the frame without undue play.
 - 3. The following words shall be cast in the top of all manhole covers "ELECTRIC POWER, MEDIUM VOLTAGE".
- L. Cables Supports:

- 1. Manholes shall be furnished with cable racks, cable hooks, and insulators to effectively support all cables indicated for present and future installation. Cable racks shall be non-metallic fiberglass channels with ample strength to support cables. Racks shall be firmly anchored to walls with stainless steel hardware. Cable hooks shall be made from stainless steel. Insulators shall be made of high-grade dry-process porcelain with smooth glazed surfaces and shall fit hooks in such manner as to prevent wobbling and insecure minimum movement.
- M. Pulling Irons:
 - 1. Stainless steel pulling irons shall be provided for each manhole. Pulling irons shall be cast in the wall opposite to the centerline of each incoming duct bank and 12 inches below centerline of bottom line of ducts.
- N. Grounding:
 - 1. Each manhole shall be provided with a grounding system. The grouding system shall consist of grounding rod and cable in accordance with the details shown on the Contract Drawings.
 - 2. Ground rod and cable shall be in accordance with the requriements of specification 260526.

2.10 JUNCTION BOXES

- A. Acceptable Manufacturers: RACO, THOMAS & BETTS, APPLETON, or approved equal.
- B. Sheet metal boxes: NEMA OS1, galvanized steel.
- C. Covers: Galvanized steel.

2.11 WIRE TROUGH

- A. Wireways shall be manufactured by Square D, Class 526, rain tight trough or approved equal.
- B. Wireway shall be completely enclosed with removable covers.
- C. Construction: 16 Gauge Galvanized Steel. 8-inch and 12-inch wire trough shall be 14-gauge galvanized steel.
- D. Finish: ANSI-49 epoxy paint applied by cathodic electro-deposition paint process over a corrosion resistant phosphate preparation.
- E. UL listed.

2.12 EXTERIOR WIRE TROUGH

- A. Wire troughs shall be manufactured by SQUARE D, COOPER B-LINE, HOFFMAN, or approved equal.
- B. Wire troughs shall be completely enclosed with removable covers.
- C. Construction: Wire trough shall be constructed of Type 304 stainless and shall have stainless steel screw clamps, and oil resistant gaskets.
- D. All hardware, bolts, brackets, and supports shall be constructed of Type 304 stainless steel.
- E. Wire troughs shall be rain tight for exterior applications.

2.13 ELECTRICALLY CONDUCTIVE CORROSION-RESISTANT THREAD COMPOUND

A. KOPR-SHIELD or approved equal.

PART 3 - EXECUTION

3.01 INSTALLATION OF CONDUITS

- A. Minimum size of conduits shall be 3/4-inch.
- B. Minimum below grade conduit depth shall be 24" below grade, measured to the top of the conduit on exterior underground installations.
- C. Conduit joints shall be cut square, threaded, reamed smooth, and drawn up tight so conduit ends will butt in couplings, connectors and fittings.
- D. All threaded conduits and fittings shall have KOPR-SHIELD compound applied to all threads prior to assembly.
- E. Make bends or offsets with standard ells or field bends with an approved bender.
- F. Run concealed conduits in direct line with long sweep bends or offsets. Run exposed conduits parallel to and at right angles to building lines. Group multiple conduit runs in banks.
- G. Secure conduits to all boxes and cabinets with double locknuts and bushings so system will be electrically continuous from service to all outlets.
- H. Install conduit in accordance with NECA Standard of Installation.
- I. Cap ends of conduits to prevent entrance of water and other foreign material during construction.
- J. Complete all conduit systems before pulling conductors.
- K. Support conduits under provisions of Section 260529.
- L. Provide approved expansion joints or fittings and bonding jumpers where conduits in concrete pass through building expansion joints.
- M. Provide cable supports in conduits rising vertically in accordance with the National Electric Code, Article 300-19, and any applicable NYCEC amendments.
- N. Provide No. 12 AWG copper pull wires or nylon cord in all empty spare conduits. Steel wire not acceptable as pull wire.
- O. Install conduit in a menner which preserves fire resistance rating of partitions and other elements.
- P. Ground and bond conduit under provisions of Section 260526.
- Q. Where neither length of conduit can be rotated, ERICKSON couplings Series 676 shall be used.
- R. In areas where enclosed and gasketed fixtures and weatherproof devices are specified, where rigid conduit enters a sheet metal enclosure, junction box and outlet box, and not terminated in a threaded hub, a steel, or malleable iron nylon insulated bullet hub, complete with recessed sealing "O" ring, shall be used, Series 370-379. DO NOT use die cast material.

- S. In concrete slabs block up conduit from forms and securely fasten in place. All conduits in slabs shall be installed below concrete slab.
- T. Where conduits running overhead pass through building expansion joints, install flexible liquid tight conduit of same size with sufficient slack to allow conduits on either side of expansion joint to move a minimum of 3-inches in any direction. Provide supports as required on each side of expansion joint, all in accordance with seismic requirements of specific area.
- U. Failure to route conduit through building without interfering with other equipment and construction shall not constitute a reason for an extra charge. Equipment, conduit and fixtures shall fit into available spaces in building and shall not be introduced into building at such times and manner as to cause damage to structure. Equipment requiring servicing shall be readily accessible.
- V. Arrange supports to prevent misalignment during wiring installation.
- W. Support conduit using coated steel or malleable iron straps, lay-in adjustable hangers, clevis hangers, and split hangers; unless otherwise noted on drawings and/or in specifications.
- X. Group related conduits; support using conduit rack. Construct rack using steel channel; provide space on each for 25 percent additional conduits.
- Y. Do not support conduit with wire or perforated pipe straps. Remove wire used for temporary supports.
- Z. Do not attach conduit to ceiling support wires.
- AA. Arrange conduit to maintain headroom and present neat appearance.
- AB. Route exposed conduit parallel and perpendicular to walls.
- AC. Route conduit installed above accessible ceilings parallel and perpendicular to walls.
- AD. Route conduit in and under slab from point-to-point.
- AE. Do not cross conduits in slab.
- AF. Maintain adequate clearance between conduit and piping.
- AG. Maintain 12-inch clearance between conduit and surfaces with temperatures exceeding 104°F (40°C).
- AH. Bring conduit to shoulder of fittings; fasten securely.
- Al. Use conduit hubs with sealing locknuts to fasten conduit in damp and wet locations.
- AJ. Install no more than equivalent of three 90-degree bends on interior locations between boxes. Use conduit bodies to make sharp changes in direction, as around beams. Use factory elbows for bends in metal conduit larger than 2-inch size.
- AK. Avoid moisture traps; provide junction box with drain fitting at low points in conduit system.
- AL. Do not use dissimilar strap or clamp supports. Provide dielectric tape, fittings, straps, and bushings where dissimilar metals are used.

- AM. Where fittings for liquid-tight flexible conduit are brought into an enclosure with a knockout, a gasket assembly, consisting of one piece "O" ring, with a Buna-R sealing material, Series 5200, shall be installed on outside of box. Fittings shall be made of either steel or malleable iron only, and shall have insulated throats or insulated bushings.
- AN. A copper ground wire sized in accordance with NEC shall be installed on the inside of the conduit as a jumper around flexible conduit to assure a continuity of ground.
- AO. Install a copper jumper across all flexible conduit including lighting fixtures, controls and other utilization equipment.
- AP. Install liquid-tight flexible conduit in such a manner as to prevent liquids from running on surface toward fittings.
- AQ. Allow sufficient slack conduit to reduce the effect of vibration.
- AR. Complete all conduit systems before pulling the conductors.
- AS. Support in accordance with requirements of National Electric Code.

3.02 INSTALLATION OF BOXES

- A. Install boxes concealed in finished walls, where applicable.
- B. Locate boxes to prevent moisture from entering or accumulating within them.
- C. Support boxes independently of conduit, as required by the National Electric Code.
- D. Provide 4" x 1-1/2" octagonal, 4" x 1-1/2" square or 4" x 2-1/8" square ceiling outlet boxes.
- E. Where required to hang a specific fixture, provide a fixture stud of the no-bolt, self-locking type on ceiling outlets.
- F. Provide 2-1/2" x 3-3/4" one gang masonry boxes for switches and receptacles installed concealed in concrete block walls. For increased cubic capacity, provide 3-1/2" x 3-3/4" one gang masonry boxes. Where more than two conduits enter the box from one direction, provide 4" square boxes with square cut device covers not less than 1" deep specifically designed for this purpose. Use round edge plaster rings only if the block walls are to be plastered. Use sectional or gang-type outlet boxes only in drywall construction.
- G. Provide 4-11/16" square outlet boxes with square cut device corners for block walls or round edge plaster rings for plastered walls for telephone outlets. Single gang device boxes are not acceptable.
- H. Provide fittings with threaded hubs for screw connections and with the proper type covers for switches and receptacles served by exposed conduit. Use pressed steel outlet only for ceiling fixture outlets.
- I. Provide condulets with threaded hubs and covers and with proper configurations for all changes of direction of exposed conduits. Standard conduit ells may be used if they do not interfere or damage or mar the appearance of the installation.
- J. Use boxes of sufficient cubic capacity to accommodate the number of conductors to be installed, in accordance with the National Electric Code.
- K. Effectively close unused openings in boxes with metal plugs or plates.

- L. Set boxes so that front edges are flush with finished surfaces.
- M. Support boxes from structural members with approved braces.
- N. Install blank device plates on outlet boxes left for future use.
- O. Provide bushings in holes through which cords or conductors pass.
- P. Install boxes so that the covers will be accessible at all times.
- Q. Electrical boxes may be installed in vertical fire resistive assemblies classified as fire/smoke and smoke partitions without affecting the fire classification, provided such openings occur on one side only in each framing space and that openings do not exceed 16 square inches. All clearance between such boxes and the gypsum board shall be completely filled with joint compound or approved fire-resistive compound. The wall shall be built around outlet boxes larger than 16 square inches so as not to interfere with the wall rating.

3.03 INSTALLATION OF PULL BOXES, JUNCTION BOXES AND WIRE TROUGHS

- A. Provide junction boxes as shown on Drawings and otherwise where required, sized according to number of conductors in box or type of service to be provided. Minimum junction box size 4-inch square and 2-1/8-inches deep. Provide screw covers for junction boxes.
- B. Install boxes in conduit runs wherever necessary to avoid long runs or too many bends. Do not exceed 100-foot runs without pull boxes. Install pull boxes at all 90-degree bends.
- C. Rigidly secure boxes to walls or ceilings. Conduit runs will not be considered adequate support.
- D. Install boxes with covers in accessible locations. Size boxes in accordance with the National Electric Code and New York City Electrical Code.
- E. Do not install pull boxes or junction boxes for joint use of line voltage and signal or low voltage controls unless all conductors are insulated for the highest voltage being used in the same box, and permitted as per the cable manufacturer's installation instructions.
- F. Coordinate installation of exterior pull boxes with General contractor to establish elevations of finished grades and pavements. All castings shall have chimney adjustment of + 6".

3.04 CONDUIT LOCATIONS

- A. Route all conduit concealed in walls or above finished ceilings in all finished spaces. Provide boxes and conduits concealed in walls for all power and controls in finished spaces.
- B. Surface mounted conduits will only be allowed in unfinished spaces.
- C. Contractor shall not route conduits over pump motors, roof hatches and trolly beams which would prevent removal of equipment, access to hatches, movement of trolly, etc.

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Nameplates and labels.
- B. Wire and cable markers.
- C. Conduit markers.

1.02 REFERENCES

- A. ANSI/NFPA 70 National Electrical Code.
- B. NYCEC New York City Electrical Code.

1.03 SUBMITTALS

- A. Submit under provisions of Section 013300.
- B. Product Data: Provide catalog data for nameplates, labels and markers.
- C. Manufacturer's Instructions: Indicate application conditions and limitations of use stipulated by Underwriters Laboratories, Inc. Include instructions for storage, handling, protection, examination, preparation and installation of product.
- D. Provide physical sample of each type of nameplate, label, marker, etc. that is to be provided in accordance with this specification for review and approval of Engineer and Owner.
- E. Provide two laminated copies of final cable and conduit schedule for Building 275 at completion of project. One copy shall be permanently affixed to wall in locaiton selected by BNY, provided binding rings as required for multiple pages. The second copy shall be provided to BNY for their records.

1.04 REGULATORY REQUIREMENTS

- A. Conform to requirements of ANSI/NFPA 70, NEC, and NYCEC.
- B. Furnish products listed and classified by Underwriters Laboratories, Inc. as suitable for purpose specified and shown.

PART 2 - PRODUCTS

2.01 NAMEPLATES AND LABELS

A. Nameplates: Engraved three-layer laminated plastic, white letters on black background. Punched or drilled for screw mounting.

B. Locations:

- 1. Substations.
- 2. Switchgear and Switchboards.
- 3. Enclosed switches and circuit breakers.
- 4. Mimic panel and control panels.
- 5. Junction boxes, pull boxes, and electrical enclosures.
- 6. Distribution panelboards.
- 7. All control switches and pilot light devices.

8. Transfer Switches.

C. Letter Size:

1. Use 1/4 inch (6 mm) letters for identifying all control pilot lights.

2.02 WIRE MARKERS

- A. Manufacturers:
 - 1. 3M ELECTRICAL SPECIALTY DIV., Product Scotch Code.
 - 2. THOMAS & BETTS CORP., Product E-Z Code.
 - 3. Substitutions shall be permitted only after receiving written approval from the Engineer.
- B. Description: Epoxy film tape type wire markers.
- C. Locations: Each conductor at each source and each load connection.
- D. Legend:
 - 1. Power and Lighting Circuits: Branch circuit or feeder number indicated on drawings and cable & conduit schedule.
 - 2. Control Circuits: Control wire number indicated on interconnection diagrams on drawings.

2.03 CONDUIT MARKERS

- A. Manufacturers:
 - 1. SETON SETMARK PIPE MARKERS
 - 2. Substitutions shall be permitted only after receiving written approval from the Engineer.
- B. Description: Snap around conduit markers.
- C. Colors:
 - 1. 600V or less: black letters on white background.
 - 2. More than 600V: black letters on orange background.
- D. Content:
 - 1. 600V or less: Conduit name/number indicated on drawings and cable & conduit schedule.
 - More than 600V: Conduit name/number indicated on drawings and cable & conduit schedule plus separate label with warning reading "DANGER CONCEALED HIGH VOLTAGE WIRING".
- E. Location: Furnish markers for each conduit longer than 6 feet (1.8 m).
- F. Spacing: 20 feet (6 m) on center, minimum of one in each space that conduit passes through.

2.04 UNDERGROUND WARNING TAPE

- A. Manufacturers:
 - 1. THOMAS & BETTS CORP., Model NAF-0700.
 - 2. Seton
 - 3. Ideal
 - 4. Substitutions shall be permitted only after receiving written approval from the Engineer.
- B. Description: 6 inch (150 mm) wide plastic tape, detectable type, colored red with suitable warning legend describing buried electrical lines.

2.05 FLOOR MARKING TAPE

- A. 2-inch wide, 5-mil pressure-sensitive vinyl tape, with black and white stripes and clear vinyl overlay.
- 2.06 WARNING LABELS AND SIGNS
 - A. Comply with NYCEC, 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 (6.4-mm) grommets in corners for mounting.
 - 3. Nominal size, 7 by 10 inches (180 by 250 mm).
 - D. 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."
 - Workspace Clearance Warning: "WARNING OSHA REGULATION AREA IN FRONT OF ELECTRICAL EQUIPMENT MUST BE KEPT CLEAR FOR 36 INCHES (915 MM)." Modify working clearance based on applicable code sections.
 - 3. Other warning labels required for arc-flash, multiple services, etc. Refer to applicable specification section(s) for additional detail.

PART 3 - EXECUTION

3.01 PREPARATION

A. Degrease and clean surfaces to receive nameplates and labels.

3.02 APPLICATION

- A. Install nameplate and label parallel to equipment lines.
- B. Install identification materials and devices at locations for most convenient viewing without interference with operation and maintenance of equipment.
- C. Secure nameplate to equipment front using screws, rivets or adhesive in accordance with manufacturer's instructions.
- D. Apply conduit markers at 20 foot (6 m) intervals, minimum of one in each space that conduit passes through.
- E. Identify underground conduits in duct bank(s) using underground warning tape. Install one tape per trench at 3 inches (75 mm) below finished grade or as identified on drawings.

3.03 ELECTRICAL EQUIPMENT IDENTIFICATION

A. The Contractor shall identify all existing circuits in existing distribution panels, switchboards and disconnect switches to remain.

- B. Label all circuits identifying the load served including all individual circuit breakers in accordance with Cable & Conduit Schedule.
- C. Label all new circuit breakers and switches used for new feeder and branch circuits.
- D. Contractor shall furnish a minimum of 5 custom engrave three-layer laminated plastic labels with up to 20 words per label as directed by the engineer/owner in addition to the required labels.

	SECTION 260553 - CABLE AND CONDUIT SCHEDULE - BROOKLYN NAVY YARD BUILDING 275						
CONDUIT NO.	SIZE	TYPE	FROM	то	CABLE & SIZE	PURPOSE	REMARKS
S275-001A	4"	EXISTING	EXISTING OUTDOOR SWITCHGEAR	BASEMENT JUNCTION BOX	4-500KCMIL	208V POWER	
S275-002A	4"	EXISTING	EXISTING OUTDOOR SWITCHGEAR	BASEMENT JUNCTION BOX	4-500KCMIL	208V POWER	
S275-003A	4"	EXISTING	EXISTING OUTDOOR SWITCHGEAR	BASEMENT JUNCTION BOX	4-500KCMIL	208V POWER	
S275-004A	4"	EXISTING	EXISTING OUTDOOR SWITCHGEAR	BASEMENT JUNCTION BOX	4-500KCMIL	208V POWER	
S275-001	4"	RGS	BASEMENT JUNCTION BOX	SWBD SEC. S275-1	4-500KCMIL	208V POWER	
S275-002	4"	RGS	BASEMENT JUNCTION BOX	SWBD SEC. S275-1	4-500KCMIL	208V POWER	
S275-003	4"	RGS	BASEMENT JUNCTION BOX	SWBD SEC. S275-1	4-500KCMIL	208V POWER	
S275-004	4"	RGS	BASEMENT JUNCTION BOX	SWBD SEC. S275-1	4-500KCMIL	208V POWER	
S275-3RD-001	4"	RGS	SWBD SEC. S275-2	JUNCTION BOX 'JB1'	4-500KCMIL & 1#3AWG GND	208V POWER	
S275-2ND-001	4"	RGS	SWBD SEC. S275-2	JUNCTION BOX 'JB1'	4-500KCMIL & 1#3AWG GND	208V POWER	
S275-T1-001	4"	RGS	SWBD SEC. S275-2	ELEVATOR JUNCTION BOX	4-500KCMIL & 1#1/0AWG GND	208V POWER	
S275-T1-002	4"	RGS	SWBD SEC. S275-2	ELEVATOR JUNCTION BOX	4-500KCMIL & 1#1/0AWG GND	208V POWER	
S275-1ST-001	2-1/2"	RGS	SWBD SEC. S275-2	JUNCTION BOX 'JB1'	4#3/0AWG & 1#6AWG GND	208V POWER	
S275-PP1-001	4"	RGS	SWBD SEC. S275-3	JUNCTION BOX 'JB1'	4-500KCMIL & 1#3AWG GND	208V POWER	
S275-4TH-001	4"	RGS	SWBD SEC. S275-3	JUNCTION BOX 'JB1'	4-500KCMIL & 1#3AWG GND	208V POWER	
S275-B132-001	4"	RGS	SWBD SEC. S275-3	JUNCTION BOX 'JB1'	4-500KCMIL & 1#3AWG GND	208V POWER	
S275-T1-001A	4"	EXISTING	ELEVATOR JUNCTION BOX	ELEVATOR DISC. SW.	4-500KCMIL & 1#1/0AWG GND	208V POWER	
S275-T1-002A	4"	EXISTING	ELEVATOR JUNCTION BOX	ELEVATOR DISC. SW.	4-500KCMIL & 1#1/0AWG GND	208V POWER	
S275-T1-001B	4"	RGS	ELEVATOR DISC. SW.	ELEVATOR TRANSFORMER	4-500KCMIL & 1#1/0AWG GND	208V POWER	
S275-T1-002B	4"	RGS	ELEVATOR DISC. SW.	ELEVATOR TRANSFORMER	4-500KCMIL & 1#1/0AWG GND	208V POWER	
T1-ELE-001	2-1/2"	RGS	ELEVATOR TRANSFORMER	ELE. MACH. ROOM. DISC. SW	4#3/0AWG & 1#6AWG GND	480V POWER	
S275-METER	1"	RGS	SWBD SEC. S275-1	UTILITY METER	MANUFACTER RECOMMENDED C/T CABLE	208V POWER	
PP1-PP2-001	2-1/2"	RGS	PP1	PP2	4#3/0AWG & 1#6AWG GND	208V POWER	

SECTION 260574 - ARC FLASH HAZARD ANALYSIS AND SHORT CIRCUIT COORDINATION STUDY **H2M**

PART 1 - GENERAL

1.01 SCOPE

- A. The contractor shall furnish short-circuit and protective device coordination studies as prepared by a qualified specialist.
- B. The contractor shall furnish an Arc Flash Hazard Analysis Study per the requirements set forth in the current version of NFPA 70E - Standard for Electrical Safety in the Workplace. The arc flash hazard analysis shall be performed according to the IEEE Standard 1584-2002, the IEEE Guide for Performing Arc-Flash Calculations.
- C. The scope of the studies shall include new distribution equipment supplied under this contract.

1.02 REFERENCES

- A. Institute of Electrical and Electronics Engineers, Inc. (IEEE):
 - 1. IEEE 141 Recommended Practice for Electric Power Distribution and Coordination of Industrial and Commercial Power Systems
 - 2. IEEE 242 -Recommended Practice for Protection and Coordination of Industrial and Commercial Power Systems
 - 3. IEEE 399 Recommended Practice for Industrial and Commercial Power System Analysis
 - 4. IEEE 241 -Recommended Practice for Electric Power Systems in Commercial Buildings
 - 5. IEEE 1015 Recommended Practice for Applying Low-Voltage Circuit Breakers Used in Industrial and Commercial Power Systems.
 - 6. IEEE 1584 -Guide for Performing Arc-Flash Hazard Calculations
- B. American National Standards Institute (ANSI):
 - 1. ANSI C37.13- Standard for Low Voltage AC Power Circuit Breakers Used in Enclosures
 - 2. ANSI C37.010- Standard Application Guide for AC High Voltage Circuit Breakers Rated on a Symmetrical Current Basis
 - 3. ANSI C 37.41- Standard Design Tests for High Voltage Fuses, Distribution Enclosed Single-Pole Air Switches, Fuse Disconnecting Switches and Accessories.
- C. The National Fire Protection Association (NFPA)
 - 1. NFPA 70 -National Electrical Code, latest edition
 - 2. NFPA 70E- Standard for Electrical Safety in the Workplace
 - 3. NYCEC New York City Electrical Code

1.03 SUBMITTALS FOR REVIEW/APPROVAL

A. The studies shall be submitted to the design engineer prior to receiving final approval of the distribution equipment shop drawings and/or prior to release of equipment drawings for manufacturing. If formal completion of the study may cause delays in equipment shipments, approval from the Engineer may be obtained for a preliminary submittal of data to ensure that the selection of device ratings and characteristics will be satisfactory to properly select the distribution equipment. The formal study will be provided to verify preliminary findings.

1.04 SUBMITTALS FOR CONSTRUCTION

- A. The results of the short-circuit, protective device coordination and arc flash hazard analysis studies shall be summarized in a final report. Electronic PDF copies of the report shall be provided.
- B. The report shall include the following sections:

- 1. Executive Summary including Introduction, Scope of Work and Results/Recommendations.
- 2. Short-Circuit Methodology Analysis Results and Recommendations
- 3. Short-Circuit Device Evaluation Table
- 4. Protective Device Coordination Methodology Analysis Results and Recommendations
- 5. Protective Device Settings Table
- 6. Time-Current Coordination Graphs and Recommendations
- 7. Arc Flash Hazard Methodology Analysis Results and Recommendations including the details of the incident energy and flash protection boundary calculations, along with Arc Flash boundary distances, working distances, Incident Energy levels and Personal Protection Equipment levels.
- 8. Arc Flash Labeling section showing types of labels to be provided. Section will contain descriptive information as well as typical label images.
- 9. One-line system diagram that shall be computer generated and will clearly identify individual equipment buses, bus numbers used in the short-circuit analysis, cable and bus connections between the equipment, calculated maximum short-circuit current a each bus location, device numbers used in the time-current coordination analysis, and other information pertinent to the computer analysis.

1.05 QUALIFICATIONS

- A. The short-circuit, protective device coordination and arc flash hazard analysis studies shall be conducted under the responsible charge and approval of a Registered Professional Electrical Engineer skilled in performing and interpreting the power system studies.
- B. The Registered Professional Electrical Engineer shall be an employee of an approved engineering firm specializing in power system studies.
- C. The Registered Professional Electrical Engineer shall have a minimum of five (5) years of experience in performing power system studies.
- D. The approved engineering firm shall demonstrate experience with Arc Flash Hazard Analysis by submitting names of at least ten actual arc flash hazard analyses it has performed in the past year.
- E. The engineering firm shall have a minimum of twenty-five (25) years of experience in performing power system studies.

1.06 COMPUTER ANALYSIS SOFTWARE

A. The studies shall be performed using SKM Systems Analysis Power*Tools or EasyPower software programs for Windows.

PART 2 - PRODUCT

2.01 STUDIES

A. The contractor shall furnish an Arc Flash Hazard Analysis Study per NFPA 70E -Standard for Electrical Safety in the Workplace, reference Article 130.3 and Annex D. This study shall also include short-circuit and protective device coordination studies.

2.02 DATA

A. Contractor shall furnish all data as required for the power system studies. The Engineer performing the short circuit, protective device coordination and arc flash hazard analysis studies shall furnish the Contractor with a listing of required data immediately after award of the

contract. The Contractor shall expedite collection of the data to assure completion of the studies as required for final approval of the distribution equipment shop drawings and/or prior to the release of the equipment for manufacturing.

- B. Source combination may include present and future motors and generators.
- C. Load data utilized may include existing and proposed loads obtained from Contract Documents provided by Owner, Owner's Representative, or Contractor. Confirm all data with Owner's Representative prior to performing study and submitting report.
- D. Include fault contribution of existing motors and other loads in the study. The Contractor shall obtain required existing equipment data, if necessary, to satisfy the study requirements.

2.03 SHORT-CIRCUIT ANALYSIS

- A. Transformer design impedances shall be used when test impedances are not available.
- B. Provide the following:
 - 1. Calculation methods and assumptions
 - 2. Selected base per unit quantities
 - 3. One-line diagram of the system being evaluated that clearly identifies individual equipment buses, bus numbers used in the short-circuit analysis, cable and bus connections between the equipment, calculated maximum short-circuit current at each bus location and other information pertinent to the computer analysis
 - 4. The study shall include input circuit data including electric utility system characteristics, source impedance data, conductor lengths, number of conductors per phase, conductor impedance values, insulation types, transformer impedances and X/R ratios, motor contributions, and other circuit information as related to the short-circuit calculations.
 - 5. Tabulations of calculated quantities including short-circuit currents, X/R ratios, equipment short-circuit interrupting or withstand current ratings and notes regarding adequacy or inadequacy of the equipment rating.
 - 6. Results, conclusions, and recommendations. A comprehensive discussion section evaluating the adequacy or inadequacy of the equipment must be provided and include recommendations as appropriate for improvements to the system.
- C. For solidly-grounded systems, provide a bolted line-to-ground fault current study for applicable buses as determined by the engineer performing the study.
- D. Protective Device Evaluation:
 - 1. Evaluate equipment and protective devices and compare to short circuit ratings
 - 2. Adequacy of switchgear, switchboards, and panelboard bus bars to withstand short circuit stresses
 - 3. Contractor notify Owner and Owner's Representative in writing, of any circuit protective devices improperly rated for the calculated available fault current.

2.04 PROTECTIVE DEVICE TIME-CURRENT COORDINATION ANALYSIS

- A. Protective device coordination time-current curves (TCC) shall be displayed on log-log scale graphs.
- B. Include on each TCC graph, a complete title with descriptive device names.
- C. Terminate device characteristic curves at a point reflecting maximum symmetrical or asymmetrical fault current to which the device is exposed.

- D. Identify the device associated with each curve by manufacturer type, function, and, if applicable, tap, time delay, and instantaneous settings recommended.
- E. Plot the following characteristics on the TCC graphs, where applicable:
 - 1. Electric utility's overcurrent protective device
 - 2. Medium voltage equipment overcurrent relays
 - 3. Medium and low voltage fuses including manufacturer's minimum melt, total clearing, tolerance, and damage bands
 - 4. Low voltage equipment circuit breaker trip devices, including manufacturer's tolerance bands
 - 5. Transformer full-load current, magnetizing inrush current, and ANSI through-fault protection curves
 - 6. Medium voltage conductor damage curves
 - 7. Ground fault protective devices, as applicable
 - 8. Pertinent motor starting characteristics and motor damage points, where applicable
 - 9. Pertinent generator short-circuit decrement curve and generator damage point
 - 10. The largest feeder circuit breaker in each motor control center and applicable panelboard.
- F. Provide adequate time margins between device characteristics such that selective operation is provided, while providing proper protection.
- G. Provide the following:
 - 1. A One-line diagram shall be provided which clearly identifies individual equipment buses, bus numbers, device identification numbers and the maximum available short-circuit current at each bus when known.
 - 2. A sufficient number of log-log plots shall be provided to indicate the degree of system protection and coordination by displaying the time-current characteristics of series connected overcurrent devices and other pertinent system parameters.
 - 3. Computer printouts shall accompany the log-log plots and will contain descriptions for each of the devices shown, settings of the adjustable devices, and device identification numbers to aid in locating the devices on the log-log plots and the system one-line diagram.
 - 4. The study shall include a separate, tabular printout containing the recommended settings of all adjustable overcurrent protective devices, the equipment designation where the device is located, and the device number corresponding to the device on the system one-line diagram
 - 5. A discussion section which evaluates the degree of system protection and service continuity with overcurrent devices, along with recommendations as required for addressing system protection or device coordination deficiencies.
 - 6. Contractor shall notify Owner in writing of any significant deficiencies in protection and/or coordination. Provide recommendations for improvements.

2.05 ARC FLASH HAZARD ANALYSIS

- A. The arc flash hazard analysis shall be performed according to the IEEE 1584 equations that are presented in NFPA70E-2009, Annex D. The arc flash hazard analysis shall be performed in conjunction with the short-circuit analysis (Section 2.03) and the protective device time-current coordination analysis (Section 2.04)
- B. The flash protection boundary and the incident energy shall be calculated at significant locations in the electrical distribution system (switchboards, switchgear, motor-control centers, panelboards, busway and splitters) where work could be performed on energized parts.
- C. Circuits 240V or less fed by single transformer rated less than 125 kVA may be omitted from the computer model and will be assumed to have a hazard risk category 0 per NFPA 70E.

- D. Working distances shall be based on IEEE 1584. The calculated arc flash protection boundary shall be determined using those working distances.
- E. When appropriate, the short circuit calculations and the clearing times of the phase overcurrent devices will be retrieved from the short circuit and coordination study model. Ground overcurrent relays should not be taken into consideration when determining the clearing time when performing incident energy calculations
- F. The short-circuit calculations and the corresponding incident energy calculations for multiple system scenarios must be compared and the greatest incident energy must be uniquely reported for each equipment location in a single table. Calculations must be performed to represent the maximum and minimum contributions of fault current magnitude for normal and emergency operating conditions. The minimum calculation will assume that the utility contribution is at a minimum. Conversely, the maximum calculation will assume a maximum contribution from the utility. Calculations shall take into consideration the parallel operation of synchronous generators with the electric utility, where applicable as well as any stand-by generator applications.
 - 1. The Arc-Flash Hazard Analysis shall be performed utilizing mutually agreed upon facility operational conditions, and the final report shall describe, when applicable, how these conditions differ from worst-case bolted fault conditions.
- G. The incident energy calculations must consider the accumulation of energy over time when performing arc flash calculations on buses with multiple sources. Iterative calculations must take into account the changing current contributions, as the sources are interrupted or decremented with time. Fault contribution from motors should be decremented as follows:
 1. Fault contribution from induction motors should not be considered beyond 5 cycles.
- H. For each piece of ANSI rated equipment with an enclosed main device, two calculations shall be made. A calculation shall be made for the main cubicle, sides, or rear; and shall be based on a device located upstream of the equipment to clear the arcing fault. A second calculation shall be made for the front cubicles and shall be based on the equipment's main device to clear the arcing fault. For all other non-ANSI rated equipment, only one calculation shall be required and it shall be based on a device located upstream of the equipment to clear the arcing fault.
- I. When performing incident energy calculations on the line side of a main breaker (as required per above), the line side and load side contributions must be included in the fault calculation.
- J. Mis-coordination should be checked amongst all devices within the branch containing the immediate protective device upstream of the calculation location and the calculation should utilize the fastest device to compute the incident energy for the corresponding location.
- K. Arc Flash calculations shall be based on actual overcurrent protective device clearing time. A maximum clearing time of 2 seconds will be used based on IEEE 1584-2002 section B.1.2. Where it is not physically possible to move outside of the flash protection boundary in less than 2 seconds during an arc flash event, a maximum clearing time based on the specific location shall be utilized.
- L. Provide the following:
 - 1. Results of the Arc-Flash Hazard Analysis shall be submitted in tabular form, and shall include device or bus name, bolted fault and arcing fault current levels, flash protection boundary distances, working distances, personal-protective equipment classes and AFIE (Arc Flash Incident Energy) levels.
 - 2. The Arc-Flash Hazard Analysis shall report incident energy values based on recommended device settings for equipment within the scope of the study.

SECTION 260574 - ARC FLASH HAZARD ANALYSIS AND SHORT CIRCUIT COORDINATION STUDY **H2M**

3. The Arc-Flash Hazard Analysis may include recommendations to reduce AFIE levels and enhance worker safety.

PART 3 - EXECUTION

- 3.01 FIELD ADJUSTMENT
 - A. Contractor shall adjust relay and protective device settings according to the recommended settings table provided by the coordination study.
 - B. Contractor shall make minor modifications to equipment as required to accomplish conformance with short circuit and protective device coordination studies.
 - C. Contractor shall notify Owner in writing of any required major equipment modifications.

3.02 ARC FLASH LABELS

- A. Contractor shall provide a 4.0 in. x 4.0 in. (or larger if required) Brady thermal transfer type label of high adhesion polyester for each work location analyzed.
- B. The labels shall be designed according to the following standards:
 - 1. UL969 Standard for Marking and Labeling Systems
 - 2. ANSI Z535.4- Product Safety Signs and Labels
 - 3. NFPA 70 (National Electric Code)- Article 110.16
 - 4. NYCEC
- C. The label shall include the following information:
 - 1. System Voltage
 - 2. Flash protection boundary
 - 3. Personal Protective Equipment category
 - 4. Arc Flash Incident energy value (cal/cm2)
 - 5. Limited, restricted, and prohibited Approach Boundaries
 - 6. Study report number and issue date
- D. Labels shall be printed by a thermal transfer type printer, with no field markings.
- E. Arc flash labels shall be provided for equipment as identified in the study and the respective equipment access areas per the following:
 - 1. Floor Standing Equipment Labels shall be provided on the front of each individual section. Equipment requiring rear and/or side access shall have labels provided on each individual section access area. Equipment line-ups containing sections with multiple incident energy and flash protection boundaries shall be labeled as identified in the Arc Flash Analysis table.
 - 2. Wall Mounted Equipment- Labels shall be provided on the front cover or a nearby adjacent surface, depending upon equipment configuration.
 - 3. General Use Safety labels shall be installed on equipment in coordination with the Arc Flash labels. The General Use Safety labels shall warn of general electrical hazards associated with shock, arc flash, and explosions, and instruct workers to turn off power prior to work.
- F. Labels shall be field installed by Contractor. The technician providing the installation shall have completed an 8-Hour instructor led Electrical Safety Training Course with includes NFPA 70E material including the selection of personal protective equipment.

3.03 ARC FLASH TRAINING

- A. The Firm supplying the Arc Flash Hazard Analysis shall train the owner's qualified electrical personnel of the potential arc flash hazards, associated with working on energized equipment (minimum of 4 hours). The training shall be certified for continuing education units (CEUs) by the International Association for Continuing Education Training (IACET) or equivalent. The trainer shall be an authorized OSHA Outreach instructor.
- B. The Firm supplying the Arc Flash Hazard Analysis shall offer instructor led and online NFPA 70E training classes.

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Dry type transformers.
- 1.02 RELATED SECTIONS
 - A. Section 260533 Raceways and Boxes for Electrical Systems.
 - B. Section 260519 Low-Voltage Electrical Power Conductors and Cables.
 - C. Section 262915 Motor Control Centers.
 - D. Section 260526 Grounding and Bonding for Electrical Systems.

1.03 REFERENCES

- A. ANSI/NFPA 70 National Electric Code.
- B. NEMA ST20 Dry Type Transformers for General Applications.

1.04 SUBMITTALS

- A. Submit product data under provisions of Section 013300.
- B. Provide outline and support point dimensions of enclosures and accessories, unit weight, voltage, KVA and impedance ratings and characteristics, tap configurations, insulation system type and rated temperature rise.
- 1.05 REGULATORY REQUIREMENTS
 - A. Conform to requirements of NFPA 70.
 - B. Furnish products listed and classified by Underwriters Laboratories, Inc.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Dry type transformers shall be manufactured by General Electric Type QL.
- B. Approved equal.

2.02 EQUIPMENT REQUIREMENTS

- A. Three-phase and Single-phase general purpose dry type transformers be self-cooled, with ratings (KVA) as indicated on the drawings.
- B. Shall meet or exceed DOE 2016 efficiency requirements.
- C. Copper windings.
- D. Sound levels not to exceed the following:
 - 1. 0-9 KVA: 40 db.
 - 2. 10-50 KVA: 45 db.

3.	51-150 KVA:	50 db.
4.	151-300 KVA:	55 db.
5.	301-500 KVA:	60 db.
6.	501-700 KVA:	62 db.

- E. Three-phase transformers rated above 15 KVA to be insulated with UL listed Class 220 rated materials; and have a maximum average full load temperature rise of 115 degrees C.
- F. Transformers to have voltage ratios as indicated on drawings. Transformers between 15 KVA and 300 KVA to be provided with six 2-1/2% full capacity taps, two above and four below primary rated voltage.
- G. Nameplate: Include transformer connection data.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Install transformers in accordance with manufacturer's recommendations.
- B. Provide both primary and secondary protection as shown on drawings.
- C. Set transformer plumb and level.
- D. Provide grounding and bonding in accordance with provisions of Section 260526.
- E. Transformers shall be factory installed in the Motor Control Center by the manufacturer of Motor Control Center where indicated on drawings.

3.02 FIELD QUALITY CONTROL

- A. Check for damage and tight connections prior to energizing transformer.
- B. Measure primary and secondary voltage and make appropriate tap adjustments.

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Distribution panelboards.
- B. Retrofit panelboards.

1.02 RELATED SECTIONS

- A. Section 260526 Grounding and Bonding for Electrical Systems.
- B. Section 260529 Hangers and Supports for Electrical Systems.
- C. Section 260553 Identification for Electrical Systems.

1.03 REFERENCES

- A. ANSI/NFPA 70 National Electric Code.
- B. NECA Standard of Installation.
- C. NEMA AB1 Molded Case Circuit Breakers.
- D. NEMA PB1 Panelboards.
- E. NEMA PB1.1 Instructions for Safe Installation, Operation and Maintenance of Panelboards Rated 600 Volts or Less.
- F. NEMA ICS2 Industrial Control Devices, Controllers and Assemblies.
- G. NEMA KS1 Enclosed Switches.

1.04 SUBMITTALS

- A. Submit product data under provisions of Section 013300.
- B. Indicate outline and support point dimensions, voltage, main bus ampacity, integrated short circuit ampere rating, and circuit breaker arrangement and sizes.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. New Panelboards
 - 1. Panelboards shall be manufactured by Siemens.
 - 2. Approved equal.
- B. Retrofit Panelboards
 - 1. Retrofit Panelboards shall be manufactured by Eaton.
 - 2. Approved equal.

2.02 PANELBOARD REQUIREMENTS

A. Provide panelboards of circuit breaker, dead-front safety type, UL labeled, and meeting all applicable requirements of the National Electrical Manufacturers Association.

- B. Provide panelboards with lugs (both main lugs and branch circuit lugs) suitable and UL approved for both aluminum and copper conductors.
- C. Provide electrically isolated neutral bars.
- D. Provide separate ground bars complete with lugs or connectors on bar.
- E. Provide key operated door and door lock. Door shall prevent access to operate circuit breakers.
- F. Provide panelboards with sequence phased bus bars or distributed phase bussing for voltage and phase as indicated on drawings.
- G. Refer to drawings for numbers of branch circuits, their ratings, number of poles, arrangements, etc.
- H. Provide typed circuit directory cards.
- I. Provide front filler plates for unused breaker knockouts.
- J. Refer to drawings for Ratings and Features.
- K. All bus bars, including ground bars shall be tin-plated copper.
- L. All circuit breakers shall be bolt-on type.

2.03 RETROFIT PANELBOARD REQUIREMENTS

- A. The panelboard shall be specifically designed for retrofit applications in existing panelboard boxes. The manufacturer shall supply in advance to the consultant complete application instructions and information on the panelboards.
- B. Trims for retrofit panelboards shall be designed specifically for retrofit applications. Trim mounting shall not be dependant nor attached to the existing enclosure. The trim and door shall attach directly to the panelboard deadfront assembly so that no external trim-fastening hardware shall be required. Trims shall have concealed hardware. Trims for branch circuit panelboards shall be supplied with a hinged door over all circuit breaker handles. Doors in panelboard trims shall not uncover any live parts. Doors shall have a semi flush cylinder lock and catch assembly. Doors over 48 inches in height shall have auxiliary fasteners. The trim and door shall be flush with adjacent walls.
- C. The minimum short-circuit rating for branch circuit panel boards shall be as specified as indicated on the drawings. Panelboards shall be fully rated. Panelboards shall be Cutler-Hammer (Eaton) type Pow-R-Line 1R or approved equal.
- D. Bolt-on type, heavy-duty, quick-make, quick-break, single- and multi-pole circuit breakers of the types specified herein, shall be provided for each circuit with toggle handles that indicate when unit has tripped.
- E. Circuit breakers shall be thermal-magnetic type with common type handle for all multiple pole circuit breakers. Circuit breakers shall be minimum 100-ampere frame and through 100-ampere trip sizes shall take up the same pole spacing. Circuit breakers shall be UL listed as type SWD for lighting circuits and HACR for all HVAC circuits.Circuit breaker handle locks shall be provided for all circuits that supply exit signs, emergency lights, energy management, and control system (EMCS) panels and fire alarm panels.

- F. Circuit breakers shall have a minimum interrupting rating of 10,000 amperes symmetrical at 240 volts, unless otherwise noted on the drawings.
- G. Existing enclosures shall be identified for retrofit suitability in advance. The structural integrity of all existing enclosures shall be verified. Any enclosure that is damaged shall be replaced with a new enclosure and panelboard under Section 262400 of this specification. The contractor shall provide exact dimensions of the existing enclosure to the manufacturer.
- H. Prior to ordering panel boards the contractor shall conduct a full evaluation of the existing panelboards. The contractor shall provide the engineer, in Microsoft Excel spreadsheet format, the following information:
 - 1. Existing main conduit feed location (top or bottom)
 - 2. Existing panelboard ampere rating and MCB or MLO
 - 3. Existing main feeder wire sizes and quantities
 - 4. Existing main ground wire size and quantities
 - 5. Any visible NEC violations
 - 6. Back-box dimensions
 - 7. Circuit breaker ampere rating and quantities
- I. Provide panelboards of circuit breaker, dead-front safety type, UL labeled, and meeting all applicable requirements of the National Electrical Manufacturers Association.
- J. Provide panelboards with lugs (both main lugs and branch circuit lugs) suitable and UL approved for both aluminum and copper conductors.
- K. Provide electrically isolated neutral bars.
- L. Provide separate ground bars complete with lugs or connectors on bar.
- M. Provide key operated door lock.
- N. Provide panelboards with sequence phased bus bars or distributed phase bussing for voltage and phase as indicated on drawings.
- O. Refer to drawings for numbers of branch circuits, their ratings, number of poles, arrangements, etc.
- P. Provide typed circuit directory cards.
- Q. Provide front filler plates for unused breaker knockouts.
- R. Refer to drawings for Ratings and Features.
- S. All bus bars, including ground bars shall be tin-plated copper.
- T. All circuit breakers shall be bolt-on type.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Ground separate ground bars to panel boxes and to the main service entrance ground bus with a code-sized grounding conductor installed in the same conduit as the phase and neutral conductors under provisions of Section 260526.

- B. Install all circuits using a common neutral bus bay in accordance with the National Electric Code. Balance all circuits to achieve not greater than 7% unbalanced neutral current in panel feeders.
- C. Provide six circuit breaker handle lock-on devices for each lighting and miscellaneous power panelboard for installation by the contractor on circuits as directed by the Engineer to prevent unauthorized personnel from turning off circuits to controls, unit heaters, autodial alarm system, etc. Provide spare lock-on devices over to the Engineer.
- D. Install panelboards in accordance with NEMA PB 1.1.
- E. Install panelboards plumb.
- F. Height: 6 feet (2 m) to top of panel board.
- G. Provide typed circuit directory for each branch circuit panelboard. Handwritten circuit directory cards will not be accepted. Revise directory to reflect circuiting changes required to balance phase loads.
- H. Provide a typed circuit directory in accordance with NEC sections 110.22 and 408.4. Circuits shall be labeled with detailed information describing the switches function and equipment location.
- I. For all existing circuits terminated to a new panelboard, contractor shall trace out and update the circuit directory in accordance with NEC sections 110.22 and 408.4. Include all costs for this work in base bid.
- J. Revise directory to reflect circuiting changes required to balance phase loads.
- K. Provide engraved plastic nameplates under the provisions of Section 260553.
- L. Panelboards shall be factory installed in the motor control center by the manufacturer of Motor Control Center where indicated on drawings.

3.02 FIELD QUALITY CONTROL

- A. Maintain proper phasing for multi-wire branch circuits.
- B. Visual and Mechanical Inspection: Inspect for physical damage, proper alignment, anchorage, and grounding. Check proper installation and tightness of connections for circuit breakers, fusible switches, and fuses.

1.01 SCOPE

A. The Contractor shall furnish and install, where indicated, a free-standing, dead-front type low voltage distribution switchboard, utilizing group mounted circuit protective devices as specified herein, and as shown on the contract drawings.

1.02 RELATED SECTIONS

- A. Section 260000 Electrical.
- B. Section 260526 Grounding and Bonding for Electrical Systems.
- C. Section 260553 Identification of Electrical Systems.
- D. Section 261823 Surge Protection.

1.03 REFERENCES

- A. The low voltage distribution switchboards and all components shall be designed, manufactured and tested in accordance with the latest applicable following standards:
 - 1. NEMA PB-2
 - 2. UL Standard 891
 - 3. UL standard 1066
 - 4. UL standard 489
 - 5. UL Standard 1449 4th edition
 - 6. Electrical Code of the City of New York

1.04 SUBMITTALS – FOR REVIEW/APPROVAL

- A. The following information shall be submitted to the Engineer:
 - 1. Master drawing index
 - 2. Front view elevation
 - 3. Floor plan
 - 4. Top view
 - 5. Single line
 - 6. Schematic diagram
 - 7. Nameplate schedule
 - 8. Component list
 - 9. Conduit entry/exit locations
 - 10. Assembly ratings including:
 - a. Short-circuit rating
 - b. Voltage
 - c. Continuous current
 - 11. Major component ratings including:
 - a. Voltage
 - b. Continuous current
 - c. Interrupting ratings
 - 12. Cable terminal sizes
 - 13. Product data sheets
- B. Where applicable, the following additional information shall be submitted to the Engineer:
 - 1. Busway connection
 - 2. Connection details between close-coupled assemblies

- 3. Composite floor plan of close-coupled assemblies
- 4. Key interlock scheme drawing and sequence of operations

1.05 SUBMITTALS – FOR CONSTRUCTION

- A. The following information shall be submitted for record purposes:
 - 1. Final as-built drawings and information for items listed in Paragraph 1.04, and shall incorporate all changes made during the manufacturing process
 - 2. Wiring diagrams
 - 3. Certified production test reports
 - 4. Installation information
 - 5. Seismic certification and equipment anchorage details as specified

1.06 QUALIFICATIONS

- A. The manufacturer of the assembly shall be the manufacturer of the major components within the assembly.
- B. For the equipment specified herein, the manufacturer shall be ISO 9001 or 9002 certified.
- C. The manufacturer of this equipment shall have produced similar electrical equipment for a minimum period of five (5) years. When requested by the Engineer, an acceptable list of installations with similar equipment shall be provided demonstrating compliance with this requirement.
- D. Where noted in the contract documents provide seismic qualified equipment.

1.07 REGULATORY REQUIREMENTS

- A. The low-voltage switchboard shall be UL labeled.
- 1.08 DELIVERY, STORAGE AND HANDLING
 - A. Equipment shall be handled and stored in accordance with manufacturer's instructions. One (1) copy of these instructions shall be included with the equipment at time of shipment.

1.09 OPERATION AND MAINTENANCE MANUALS

A. Equipment operation and maintenance manuals shall be provided with each assembly shipped and shall include instruction leaflets, instruction bulletins and renewal parts lists where applicable, for the complete assembly and each major component.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Eaton
- B. Square D
- C. ABB
- D. The listing of specific manufacturers above does not imply acceptance of their products that do not meet the specified ratings, features and functions. Manufacturers listed above are not relieved from meeting these specifications in their entirety. Products in compliance with the

specification and manufactured by others not named will be considered only if pre-approved by the Engineer ten (10) days prior to bid date.

2.02 RATINGS

- A. The assembly shall be rated to withstand mechanical forces exerted during short-circuit conditions when connected directly to a power source having available fault current of 65,000 amperes symmetrical at rated voltage or as shown on the contract documents.
- B. Bus voltage and current rating to be as indicated on the contract documents.

2.03 CONSTRUCTION

- A. Switchboard shall consist of the required number of vertical sections bolted together to form a rigid assembly. The sides and rear shall be covered with removable bolt-on covers. All edges of front covers or hinged front panels shall be formed. Provide adequate ventilation within the enclosure.
- B. All sections of the switchboard shall be front and rear aligned with depth as shown on the drawings. All protective devices shall be group mounted. Devices shall be front removable and load connections front accessible enabling switchboard to be mounted against a wall.
- C. The assembly shall be provided with adequate lifting means.
- D. The switchboard shall be equal to Eaton type Pow-R-Line C utilizing the components herein specified and as shown on the drawings.
- E. The switchboard shall be suitable for use as service entrance equipment and be labeled in accordance with UL requirements.

2.04 BUS

- A. All bus bars shall be silver-plated copper. Main horizontal bus bars shall be mounted with all three phases arranged in the same vertical plane. Bus sizing shall be based on NEMA standard temperature rise criteria.
- B. Provide a full capacity neutral bus where a neutral bus is indicated on the drawings.
- C. A 1/4 x 2 inch copper ground bus (minimum) shall be furnished firmly secured to each vertical section structure and shall extend the entire length of the switchboard.
- D. All hardware used on conductors shall be high-tensile strength and zinc-plated. All bus joints shall be provided with conical spring-type washers.

2.05 WIRING/TERMINATIONS

- A. Small wiring, necessary fuse blocks and terminal blocks within the switchboard shall be furnished as required. Control components mounted within the assembly, such as fuse blocks, relays, pushbuttons, switches, etc., shall be suitably marked for identification corresponding to appropriate designations on manufacturer's wiring diagrams.
- B. Mechanical-type terminals shall be provided for all line and load terminations suitable for copper cable rated for 75 degrees C of the size as indicated on the drawings.
- C. Lugs shall be provided in the incoming line section for connection of the main grounding conductor. Additional lugs for connection of other grounding conductors shall be provided as indicated on the drawings.

D. All control wire shall be type SIS, bundled and secured with nylon ties. Insulated locking spade terminals shall be provided for all control connections, except where saddle type terminals are provided integral to a device. All current transformer secondary leads shall first be connected to conveniently accessible short-circuit terminal blocks before connecting to any other device. All groups of control wires leaving the switchboard shall be provided with terminal blocks with suitable numbering strips. Provide wire markers at each end of all control wiring.

2.06 MAIN PROTECTIVE DEVICES

- A. Main protective devices shall be switchboard class insulated case low-voltage power circuit breakers, Eaton type Magnum SB or approved equal.
- B. Main breakers shall be UL listed for application in their intended enclosures for 100% of their continuous ampere rating.
- C. Main breakers shall be true two-step stored energy devices and shall be manually operated unless otherwise indicated on contract documents.
- D. All main and tie circuit breakers shall have a minimum symmetrical interrupting capacity of 65,000 amperes. Main and tie circuit breakers shall have 30-cycle short-time withstand ratings equal to interrupting capacity up to 65kA.
- E. All main insulated case circuit breakers shall be UL489 listed.
- F. All insulated case circuit breakers shall have a nameplate clearly marking any electrical accessories that are mounted in the breaker at the time of sale. The accessory shall have a label that will indicate its function and voltage. All accessories shall be modular, plug and lock type, and UL listed for easy field installation.
- G. The breaker control interface shall have color-coded visual indicators to indicate contact open or closed positions as well as mechanism charged and discharged positions. Manual control pushbuttons on the breaker face shall be provided for opening and closing the breaker. The insulated case circuit breaker shall have a "Positive On" feature. The breaker flag will read "Closed" if the contacts are welded and the breaker is attempted to be tripped or opened.
- H. Main circuit breaker shall be equipped with a true RMS sensing, solid-state tripping system consisting of at least three current sensors microprocessor-based trip device and trip actuator. The trip unit shall use microprocessor-based technology to provide the basic adjustable time-current protection. Trip unit shall be Digitrip 520MC, or approved equal.
- I. Provide trip units with integral arc flash reduction mode for 1200A frame and above.
- J. Trip units shall include the following individually adjustable time/current curve shaping solid-state elements:
 - 1. Programmable long-time setting
 - 2. Programmable long-time delay with selectable I2t [and I4t curve shaping DT-1150+ only]
 - 3. Programmable short-time setting
 - 4. Programmable short-time delay with selectable flat or I2t curve shaping
 - 5. Programmable instantaneous setting including OFF position
 - 6. Main breakers shall have individually adjustable ground fault current pickup and time, with selectable flat or I2t curve shaping. Provide ground fault trip or ground alarm only as shown on the drawings.
- K. Trip units shall have a 4-character LCD display showing phase, neutral, and ground current. The accuracy of these readings shall be +/- 2% of full scale.

L. Trip units shall be equipped to permit communication via a network twisted pair to for remote monitoring. All monitored parameters and statuses shall be transmitted.

2.07 FEEDER PROTECTIVE DEVICES

- A. Protective devices shall be UL489 Listed molded case circuit breakers with inverse time and instantaneous tripping characteristics and shall be Eaton or approved equal.
- B. Circuit breakers shall be operated by a toggle-type handle and shall have a quick-make, quick-break over-center switching mechanism that is mechanically trip-free. Automatic tripping of the breaker shall be clearly indicated by the handle position. Contacts shall be non-welding silver alloy and arc extinction shall be accomplished by means of DE-ION arc chutes. A push-to-trip button on the front of the circuit breaker shall provide a local manual means to exercise the trip mechanism.
- C. Circuit breakers shall have a minimum symmetrical interrupting capacity as indicated on the drawings.
- D. Circuit breakers 400-ampere frame and below shall be have thermal-magnetic trip units and inverse time-current characteristics
- E. Circuit breakers 600-ampere frame through 2500-ampere frame shall have microprocessor-based RMS sensing trip units as specified below:
 - 1. Digitrip 310+
 - a. Each molded case circuit breaker microprocessor-based tripping system shall consist of three (3) current sensors, a trip unit and a flux-transfer shunt trip. The trip unit shall use microprocessor-based technology to provide the adjustable, True-RMS, time-current protection functions. The trip unit shall be Eaton Digitrip 310+ or approved equal.
 - b. An adjustable trip setting dial mounted on the front of the trip unit, or interchangeable ratings plugs shall establish the continuous trip ratings of each circuit breaker. Rating plugs shall be fixed or adjustable as indicated. Rating plugs shall be interlocked so they are not interchangeable between frames and interlocked such that a breaker cannot be closed and latched with the rating plug removed.
 - c. System coordination shall be provided by the following microprocessor-based time-current curve shaping adjustments:
 - 1) Adjustable long-time setting (set by adjusting the trip setting dial or rating plug)
 - 2) Adjustable short-time setting and delay with selective curve shaping
 - 3) Adjustable instantaneous setting
 - d. Circuit breakers, where indicated on the drawings, shall include an Arc Flash Reduction Maintenance System (ARMs)
 - The ARMs technology shall be provided to reduce arc energy during periods of maintenance. The system shall engage an independent, reduced instantaneous pickup and reduce total clearing time when activated.
 - 2) With the ARMs technology active, total clearing time shall be equal to the total clearing time of the instantaneous override. Maintenance mode technology with clearing times greater than the instantaneous override are not acceptable.
 - 3) Activation and deactivation of the ARMs technology and local indication shall be accessible from the face of the trip unit without opening the circuit breaker door and exposing operators to energized parts. Recalibration or adjustment of trip unit parameters shall not be required when enabling / disabling the ARMs technology.
 - e. The microprocessor-based trip unit shall have both powered and unpowered thermal memory to provide protection against cumulative overheating should a number of overload conditions occur in quick succession.

- f. When the adjustable instantaneous setting is omitted, the trip unit shall be provided with an instantaneous override.
- g. Where internal ground fault protection is specified, adjustable settings shall not exceed 1200 amperes. Provide neutral ground fault sensor for four-wire loads.
- h. Breakers shall have built-in test points for testing the long-time delay, instantaneous, and ground fault functions of the breaker by means of a test set.

2.08 ACCESSORIES

A. Provide shunt trips, bell alarms and auxiliary switches as shown on the contract drawings.

2.09 MISCELLANEOUS DEVICES

- A. Key interlocks shall be provided as indicated on the drawings.
- B. Control power transformers with primary and secondary protection shall be provided, as indicated on the drawings, or as required for proper operation of the equipment.
- C. For outdoor NEMA 3R installations, each section of the switchboard shall be provided with a thermostatically controlled space heater. Power for the space heaters shall be obtained from a source as indicated on the drawings.

2.10 SURGE PROTECTIVE DEVICE

- A. SPD shall comply with ANSI/UL 1449 4th Edition or later listing by Underwriters Laboratories (UL).
- B. Service entrance located SPDs shall be tested and demonstrate suitability for application within ANSI/IEEE C62.41 Category C environments.
- C. The SPD shall be of the same manufacturer as the switchboard.
- D. The SPD shall be factory installed integral to the switchboard by the original equipment manufacturer.
- E. Locate the SPD on the load side of the main disconnect device, as close as possible to the phase conductors and the ground/neutral bar.
- F. The SPD shall be connected through a disconnect (30A circuit breaker). The disconnect shall be located in immediate proximity to the SPD.
- G. All monitoring and diagnostic features shall be visible from the front of the equipment.
- H. Maintenance Free Design The SPD shall be maintenance free and shall not require any user intervention throughout its life. SPDs containing items such as replaceable single-mode modules, replaceable fuses, or replaceable batteries shall not be accepted. SPDs requiring any maintenance of any sort such as periodic tightening of connections shall not be accepted. SPDs requiring user intervention to test the unit via a diagnostic test kit or similar device shall not be accepted.
- I. Balanced Suppression Platform The surge current shall be equally distributed to all MOV components to ensure equal stressing and maximum performance. The surge suppression platform must provide equal impedance paths to each matched MOV. Designs incorporating replaceable SPD modules shall not be accepted.

- J. Electrical Noise Filter Each Type 2 unit shall include a high-performance EMI/RFI noise rejection filter. Noise attenuation for electric line noise shall be up to 50 dB from 10 kHz to 100 MHz using the MIL-STD-220A insertion loss test method. Products unable able to meet this specification shall not be accepted.
- K. Type 2 units with filtering shall conform to UL 1283 5th Edition
- L. Type 1 units shall not contain filtering or have a UL 1283 5th Edition Listing.
- M. Internal Connections No plug-in component modules or printed circuit boards shall be used as surge current conductors. All internal components shall be soldered, hardwired with connections utilizing low impedance conductors.
- N. Monitoring Diagnostics Each SPD shall provide the following integral monitoring options:
 - 1. Protection Status Indicators Each unit shall have a green / red solid-state indicator light that reports the status of the protection on each phase.
 - 2. For wye configured units, the indicator lights must report the status of all protection elements and circuitry in the L-N and L-G modes. Wye configured units shall also contain an additional green / red solid-state indicator light that reports the status of the protection elements and circuitry in the N-G mode. SPDs that indicate only the status of the L-N and L-G modes shall not be accepted.
 - 3. For delta configured units, the indicator lights must report the status of all protection elements and circuitry in the L-G and L-L modes
 - 4. The absence of a green light and the presence of a red light shall indicate that damage has occurred on the respective phase or mode. All protection status indicators must indicate the actual status of the protection on each phase or mode. If power is removed from any one phase, the indicator lights must continue to indicate the status of the protection on all other phases and protection modes. Diagnostics packages that simply indicate whether power is present on a particular phase shall not be accepted.
 - 5. Remote Status Monitor The SPD must include Form C dry contacts (one NO and one NC) for remote annunciation of its status. Both the NO and NC contacts shall change state under any fault condition.
 - 6. Audible Alarm and Silence Button The SPD shall contain an audible alarm that will be activated under any fault condition. There shall also be an audible alarm silence button used to silence the audible alarm after it has been activated.
- O. Electrical Requirements:
 - 1. Unit Operating Voltage Refer to drawings for operating voltage and unit configuration.
 - 2. Maximum Continuous Operating Voltage (MCOV) The MCOV shall not be less than 115% of the nominal system operating voltage.
 - 3. The suppression system shall incorporate thermally protected metal-oxide varistors (MOVs) as the core surge suppression component for the service entrance and all other distribution levels. The system shall not utilize silicon avalanche diodes, selenium cells, air gaps, or other components that may crowbar the system voltage leading to system upset or create any environmental hazards. End of life mode to be open circuit. Unit with end of life short-circuit mode are not acceptable.
 - 4. Unit shall operate without the need for an external overcurrent protection device (OCPD), and be listed by UL as such. Unit must not require external OCPD or replaceable internal OCPD for the UL Listing.
 - 5. Protection Modes The SPD must protect all modes of the electrical system being utilized. The required protection modes are indicated by bullets in the following table:

	Protection Modes			
Configuration	L-N	L-G	L-L	N-G
Wye	•	•	•	•

Delta	N/A	•	•	N/A
Single Split Phase	•	•	•	•
High Leg Delta	•	•	•	•

- 6. Nominal Discharge Current (In) All SPDs applied to the distribution system shall have a 20kA In rating regardless of their SPD Type (includes Types 1 and 2) or operating voltage. SPDs having an In less than 20kA shall be rejected.
- 7. ANSI/UL 1449 4th Edition Voltage Protection Rating (VPR) The maximum ANSI/UL 1449 4th Edition VPR for the device shall not exceed the following:

Modes	208Y/120	480Y/277	600Y/347
L-N; L-G; N-G	700	1200	1500
L-L	1200	2000	3000

2.11 CUSTOMER METERING

- A. Where indicated on the drawings, provide a separate customer metering compartment with a front facing hinged door and a UL listed microprocessor based multifunction power meter equal to Eaton PXM1200. Include current transformers wired to shorting-type terminal blocks for each meter. Provide fused potential taps as the potential source for metering as shown on the drawings.
- B. The meter surge withstand shall conform to IEEE C37.90.1 and ANSI C62.41.
- C. The meter shall be user programmable for voltage range to any PT ratio.
- D. The meter shall accept a direct voltage input range of up to 400 Volts Line to Neutral, and a range of up to 690 Volts Line to Line.
- E. Meter shall accept the following current sensor types:
 - 1. 5A
 - 2. 1A
 - 3. 333mV
 - 4. 100mV Rogowski Coil
- F. The meter shall have the following additional ratings and features:
- G. Meter current input withstand rated for 20A continuous. Fault Current Withstand shall be 100 Amps for 1 seconds
- H. Meter shall be programmable for current to any CT ratio. The use of DIP switches for selecting fixed ratios shall not be acceptable
- I. All inputs and outputs shall be galvanically isolated to 2500 Volts AC.
- J. The meter shall have an accuracy of +/- 0.2% or better for volts and amps, and 0.2% for power and energy functions. The meter shall meet the accuracy requirements of IEC62053-22 (class 0.2S) and ANSI C 12.20 (Class 0.2).
 - 1. The meter shall sample the current and voltage inputs at 512 samples per cycle for high accuracy metering.
 - a. Meter shall provide the following measurements with a 100ms update rate:
 - 1) Volts (phase to phase and phase to neutral; per phase and average)
 - 2) Amps (per phase, neutral, and average)
 - 3) KW (per phase, and total)
 - 4) KVAR (per phase and total)

- 5) KVA (per phase and total)
- 6) PF (apparent power factor)
- 7) Frequency
- K. Type MM1000 meters shall provide the following measurements with a 1 s update rate:
 - 1. kWh (forward, reverse, total, net)
 - 2. kVARh , (forward, reverse, total, net)
 - 3. kVAh (total)
 - 4. kWh per phase (forward, reverse)
 - 5. kVARh per phase (forward, reverse)
 - 6. kVAh per phase (total)
 - 7. % THD (Total Harmonic Distortion) monitoring to the 63rd harmonic order for currents and L-N voltage in 4 wire wye and L-L voltage in 3 Wire Delta
- L. The meter shall provide user configured fixed window or sliding window demand. This shall allow the user to set up the particular utility demand profile.
- M. Demand Readings shall be available for kW, kVAR and kVA.
- N. The meter shall include independent communication option modules that can be mounted on the back of the meter supporting multiple protocols, including the following minimum capability:
 - 1. Serial Communication Format (standard included on base meter)
 - a. Connection Type: RS-485
 - b. Protocols: Modbus RTU, DNP 3.0
 - c. Baud rates shall be from 1200 to 38,400 baud
 - 2. Network Communication Format
 - a. Connection Type: RJ-45 10/100 Base-T Ethernet Network port
 - b. Protocols: Ethernet TCP/IP, Modbus TCP, BACnet/IP SMTP (email), HTTP, HTTPS, NTP

2.12 ENCLOSURES

A. NEMA 1 Enclosure

2.13 NAMEPLATES

- A. Engraved nameplates, mounted on the face of the assembly, shall be furnished for all main and feeder circuits as indicated on the drawings. Nameplates shall be laminated plastic, black characters on white background. Characters shall be 3/16-inch high, minimum. Nameplates shall give item designation and circuit number as well as frame ampere size and appropriate trip rating. Furnish master nameplate giving switchboard designation, voltage ampere rating, short-circuit rating, manufacturer's name, general order number, and item number.
- B. Control components mounted within the assembly, such as fuse blocks, relays, pushbuttons, switches, etc., shall be suitably marked for identification corresponding to appropriate designations on manufacturer's wiring diagrams.

2.14 FINISH

A. All exterior and interior steel surfaces of the switchboard shall be properly cleaned and provided with a rust-inhibiting phosphatized coating. Color and finish of the switchboard shall be ANSI 61 light gray.

PART 3 EXECUTION

3.01 PREPARATION

- A. Provide and install concrete housekeeping pad as shown on drawings
- B. Provide and install electrical matting to extend 36 inches beyond end of switchboard. Cut matting clear of obstructions.
- C. Shop inspect and test switchboard in accordance with NEMA PB 2.
- D. Make completed switchboard available for inspection at manufacturers factory prior to packaging for shipment. Notify Owner at least seven (7) days prior to inspection.
- E. Allow witnessing of factory inspections and tests at manufacturers test facility. Notify Owner at least seven (7) days before inspections and tests are scheduled.

3.02 INSTALLATION

- A. Install switchboard in location as indicated on contract drawings in accordance with NEMA, NEC and manufacturer's instructions.
- B. Tighten accessible bus connections and mechanical fasteners after placing switchboard.

3.03 ADJUSTING

- A. Adjust all operating mechanisms for free mechanical movement.
- B. Tighten bolted bus connections in accordance with manufacturers instructions.
- C. Adjust circuit breaker trip and time delay settings to values as indicated by Architect/Engineer in field.

3.04 SOURCE QUALITY CONTROL

- A. Provide Owner and Architect/Engineer with a copy of all test records.
- B. Provide Owner and Architect/Engineer with Operations and Maintenance Manual prior to contract closeout.
- C. Touch up scratched or marred surfaces to match original finishes.

3.05 DEMONSTRATION AND TRAINING

- A. General:
 - 1. Manufacturer shall provide the services of factory trained specialists to instruct the Navy Yard's operation and maintenance personnel in recommended operation and corrective and preventive maintenance procedures for equipment. Training shall be scheduled prior to start-up of the equipment.
 - 2. The qualifications of the specialists shall be subject to approval by the Navy Yard's representative.
 - 3. The qualifications of the specialists shall be subject to approval by the Navy Yard's representative.

- 4. Manufacturer shall be responsible for coordinating these services at times acceptable to the Navy Yard, with a minimum of 14 days prior notice, after an approval of the Lesson Plan.
- 5. All training shall be conducted at the Brooklyn Navy Yard unless otherwise specified.
- 6. The Navy Yard reserves the right to videotape any and all manufacturer training sessions.
- B. Submittals:
 - 1. Manufacturer shall submit for approval proposed Lesson Plans for the instruction prior to scheduling training. Lesson plans shall include operations, mechanical maintenance, and electrical maintenance as outlined in the attached schedule at the end of this section.
 - 2. Manufacturer shall submit for approval credentials of their designated instructors with the Lesson Plan Submittals. Credentials shall include a brief resume and specific details of the instructor's experience with operation and maintenance of and training on the equipment specified.
- C. Instruction Lesson Plans:
 - 1. Manufacturer's proposed Lesson Plans shall include the elements presented in the Training Instruction Lesson Plans in Paragraph 3.05,C.4. and any other information necessary for proper operation and maintenance of the equipment. Specific components and procedures shall be identified in the proposed Lesson Plan.
 - 2. Manufacturer's proposed Lesson Plans shall detail specific instruction topics. Training aids to be utilized including handouts, in the instruction shall be referenced and attached to the proposed Lesson Plan. "Hands-On" demonstrations planned for the instruction shall be described in the Lesson Plans.
 - 3. The manufacturer shall indicate the estimated duration of each segment of the training Lesson Plans and the training audience the instruction is to address.
 - 4. Training Instruction Lesson Plans: Guide for Equipment Maintenance:
 - a. Maintenance Training:
 - 1) System Overview.
 - (a) Describe the function and performance objectives of the equipment or system.
 - (b) Describe the main features of the equipment or system.
 - (c) Identify all support system and related auxiliary equipment.
 - 2) Preventive Maintenance (PM):
 - (a) Define the recommended PM program and schedules for each system and equipment item.
 - (b) Describe PM procedures.
 - (c) Describe inspection and test procedures and use of test equipment, if applicable.
 - (d) Describe routine inspection procedures required to:
 - (1) Perform an inspection of equipment while it is operating.
 - (2) Identify symptoms of potential problems to anticipate breakdowns.
 - (e) Describe equipment housekeeping procedures.
 - b. Equipment Troubleshooting:
 - 1) Define recommended systematic troubleshooting procedures.
 - 2) Provide component-specific troubleshooting checklists.
 - 3) Describe applicable equipment testing and diagnostic procedures to facilitate troubleshooting.
 - c. Equipment Corrective Maintenance:
 - 1) Describe recommended equipment preparation requirements.
 - 2) Identify and describe the use of any special tools required for maintenance of the equipment.
 - 3) Describe component removal/installation and disassembly/assembly procedures.
 - 4) Perform at least two "hands-on" demonstrations of common corrective maintenance repairs.

- 5) Describe recommended measuring instruments and procedures, and provide instruction on interpreting alignment measurements, as appropriate.
- 6) Define recommended torquing, mounting, calibration and/or alignment procedures and settings, as appropriate.
- 7) Describe recommended procedures to check/test equipment following a corrective repair.
- 5. Operations Training:
 - a. System Overview:
 - 1) Describe the function and performance objective of the equipment or system.
 - 2) Describe the main features of the equipment or system.
 - 3) Identify all support systems and related auxiliary equipment.
 - b. Operation:
 - 1) Describe operating principles and practices.
 - 2) Describe routine operating, start-up and shutdown procedures.
 - 3) Describe alarm conditions and response to alarms. Identify safety features and control interlocks.
 - 4) Describe routine monitoring and record keeping procedures.
- 6. Responsibilities:
 - a. Manufacturer's Instructors shall be fully prepared for the training sessions. Training delivery shall be communicative, clear and proceed according to the approved lesson plan material covered shall be appropriate for the personnel in attendance. If training delivery is found by the Nor Engineer to be not to Standards or requirements, the training shall be postponed and rescheduled at a cost to be borne by the Contractor.
- 7. Training Schedule and Operation & Maintenance Manuals:
 - a. In order to provide the Navy Yard with adequate time requirements for manufacturer's training, minimum training time of 4 hours will be required.

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Switches, receptacles, thermostats, device plates and other wiring devices as indicated on Drawings.

1.02 REFERENCES

- A. ANSI/NFPA 70 National Electric Code.
- B. NYCEC New York City Electrical Code.
- C. NEMA WD1 General Purpose Wiring Devices.

1.03 SUBMITTALS

- A. Submit product data under provisions of Section 013300.
- B. Include device locations in conduit routing and box location submittal.
- C. Provide manufacturer's catalog information showing dimensions, colors and configuration.

1.04 REGULATORY REQUIREMENTS

A. Furnish products listed and classified by Underwriters Laboratories, Inc. as suitable for purpose specified and shown.

PART 2 - PRODUCTS

2.01 SWITCHES

- A. Manufacturers: HUBBELL, LEVITON, PASS & SEYMOUR.
- B. Single pole, 20 amp, 120/277 VAC, NEMA WD-1, heavy duty, UL20.
- C. Device Plate: Stainless steel.

2.02 RECEPTACLES

- A. Manufacturers: HUBBELL, LEVITON, PASS & SEYMOUR.
- B. 20 amp, 125 VAC, NEMA WD-1, heavy duty.
- C. 20 amp, 125 VAC, NEMA WD-1, heavy duty, ground fault circuit interrupter.
- D. Duplex type.
- E. Device Plate: Stainless steel.

2.03 MANUAL MOTOR RATED THERMAL SWITCH

- A. Acceptable Manufacturers: SQUARE D, Class 2510, Type KG1A, Type KG2C (3-pole, 600V) or approved equal.
- B. Contractor shall coordinate voltage, phase and current rating with equipment.

3.01 INSTALLATION

- A. Mounting:
 - 1. Mount all switches 46-inches above finished floor to center line of switch unless noted otherwise.
 - 2. Mount all receptacles 18-inches above finished floor to center line of receptacle unless noted otherwise.
 - 3. Install switches with OFF position down.
- B. Polarity: Properly wire all receptacles so that the hot wire, the neutral wire and the ground wire connect to the proper terminal on all receptacles.
- C. Grounding: Install all devices in boxes specified under Section 260533 and install a No. 12 green ground wire from device grounding terminal to the outlet box in accordance with the National Electric Code.
- D. Install device plates on switch, receptacle and blank outlets in full contact with wall surface.
- E. Provide new SO cord for all chemical pumps and install plug end to match receptacle.

3.02 FIELD QUALITY CONTROL

- A. Inspect each wiring device for defects.
- B. Operate each wall switch with circuit energized and verify proper operation.
- C. Verify that each receptacle device is energized.
- D. Test each receptacle device for proper polarity.
- E. Test each GFCI receptacle device for proper operation.

END OF SECTION

H2M

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Disconnect switches.
- B. Fuses.
- C. Enclosed Circuit Breakers.

1.02 REFERENCES

- A. NEMA KS-1 Enclosed Switches.
- B. ANSI/UL 198C High Intensity Capacity Fuses, Current Limiting Types.
- C. ANSI/UL 198E Class R Fuses.
- D. FS W-S 865 Switch, Box (Enclosed), Surface Mounted.
- E. NEMA AB1 Molded Case Circuit Breakers.
- F. NYCEC New York City Electrical Code.
- G. ANSI/NFPA 70 National Electric Code.

1.03 SUBMITTALS

- A. Submit product data under provisions of Section 013300.
- B. Include equipment locations in conduit routing and box location submittal.
- C. Include outlet drawings with dimensions and equipment ratings for voltage, capacity, horsepower and short circuit current ratings.

1.04 COORDINATION

A. Coordinate layout and installation of switches, circuit breakers, and components with equipment served and adjacent surfaces. Maintain required workspace clearances and required clearances for equipment access doors and panels.

PART 2 - PRODUCTS

2.01 DISCONNECT SWITCHES

- A. Disconnect switches shall be GENERAL ELECTRIC, heavy-duty Type TH or approved equal.
- B. 75°C conductor ratings.
- C. Ratings: 600VAC
- D. Quick-break, quick-make, load interrupter enclosed knife switch with externally operable handle interlocked to prevent opening front cover with switch in ON position. Handle lockable in OFF position.
- E. Suitable for use as service entrance equipment.

- F. UL listed for Class R 200,000 RMS amps, symmetrical IC.
- G. Class R fusing kit.
- H. Enclosures: Refer to drawings.

2.02 FUSES

- A. Fuses shall be Littlefuse KLNR Class RK1 or approved equal.
- B. Fuses shall be rated for 600 volts AC.
- C. Interrupting Rating: 200,000 RMS amps.

2.03 EXTRA MATERIALS

A. Provide one complete set based on number of poles of spare fuses for each fused disconnect switch. Provide to Owner.

PART 3 - EXECUTION

3.01 INSTALLATION REQUIREMENTS

- A. Install individual wall-mounted switches and circuit breakers with tops at uniform height unless otherwise indicated.
- B. Temporary Lifting Provisions: Removed temporary lifting eyes, channels, and brackets and temporary blocking of moving parts from enclosures and components.
- C. Provide switches/enclosed circuit breakers at locations as indicated on drawings.
- D. Refer to disconnect switch schedule on drawings for ampacity ratings, fuse sizes, number of poles and enclosure ratings.
- E. Install fuses in fusible devices.
- F. Install engraved nameplates on each switch and enclosed circuit breaker identifying the following:
 - 1. Switch designated.
 - 2. Load served.
 - 3. Power origination.
 - 4. Fuse size as indicated on drawings.

3.02 ADJUSTING

- A. Adjust moving parts and operable components to function smoothly, and lubricate as recommended by manufacturer.
- B. Set field-adjustable circuit breaker trip ranges.

1.01 SECTION INCLUDES

- A. Interior and exterior luminaries and accessories.
- B. Emergency lighting and units.

1.02 REFERENCES

- A. NEMA WD 6 Wiring Devices Dimensional Requirements.
- B. NFPA 70 National Electric Code.
- C. NYCEC New York City Electrical Code.
- D. NFPA 101 Life Safety Code.
- E. LM-79-08, IESNA Approved Method for the Electrical and Photometric Measurements of Solid-Sate Lighting Products
- F. LM-80-08, IESNA Approved Method for Measuring Lumen Maintenance of LED Light Sources

1.03 SUBMITTALS

- A. Submit product data under provisions of Section 013300.
- B. Shop Drawings: Indicate dimensions and components for each luminaire.
- C. Product Data: Provide dimensions, ratings, performance data and installation instructions.
- D. Submit manufacturer's installation instructions. Indicate application conditions and limitations of use stipulated by Product testing agency specified under Regulatory Requirements. Include instructions for storage, handling, protection, examination, preparation and installation of Product.
- E. All foot candle calculations and photometrics must be provided with substitute products. Photometrics shall include a room by room analysis showing walls, room names and room numbers. Calculation points shall be 2 feet on center, measured at 30" above the floor. Maintained foot candle levels shall meet or exceed IES recommended light levels for the type of space. On each drawing, provide a table showing the Room Name, Room Number, Maximum Light Level, Minimum Light Level, Average Light Level, Min:Max Ratio and, IES File Model Number, and IES recommended light level with specific references.
- F. All substitute LED light fixtures and LED retrofit lighting kits must be Design Lights Consortium (DLC) qualified.
- G. All substitute LED replacement lamps must be listed by Energy Star as Certified Light Bulbs.

1.04 REGULATORY REQUIREMENTS

- A. Conform to requirements of ANSI/NFPA 70 and NYCEC.
- B. Furnish products listed and classified by Underwriters Laboratories, Inc.

1.05 EXTRA PRODUCTS

- A. Section 017800 Closeout Submittals.
- B. LED Fixtures: At completion of installation, deliver to Owner.
 - 1. Four (4) additional fixtures for each type specified listed on the light fixture schedule.

PART 2 - PRODUCTS

2.01 LIGHTING UNITS

- A. Refer to LIGHTING FIXTURE SCHEDULE on drawings for fixture manufacturer, catalog number, and fixture description.
- B. All fixtures equipped with emergency battery packs shall have label, test light, and switch accessible and visible from the room floor.

2.02 LIGHTING FIXTURE NOTES

- A. MOUNTING: Electrical Contractor is responsible for reviewing all mounting arrangements prior to ordering any products. Electrical Contractor is responsible for ordering all of the proper fixtures, mounting hardware and miscellaneous fasteners to complete project. Fixtures to be secured to the structure from a minimum of two points, at opposing ends of the fixture when ceiling recessed or surface mounted. Four points shall be secured where necessary for the fixture to be parallel and tight to underside of ceiling. All recessed fixtures to fit tight to ceiling to eliminate all light leaks. Trim kits, when not secured internally to fixture, shall be secured to structure at a minimum of two points.
- B. MOUNTING: Prior to submitting and ordering any light fixture, Contractor is responsible for verifying adequate mounting clearances for all light fixtures that are to be recessed into a grid type ceiling. Where new ceilings are to be installed, contractor shall coordinate with ceiling installers for exact mounting heights and required mounting spaces.
- C. FINISHES: All exposed portions (permanent or adjustable) of fixtures to be finished by the manufacturer in a finish as specified.
- D. Fixtures shall come pre-assembled and complete with all sockets (incandescent to be spring supported), lamp ends, ballasts, transformers, fixture ends, trim rings, plates, and low density mounting kits (as required) for a complete installation.
- E. LAMPS: SYLVANIA, PHILLIPS or GENERAL ELECTRIC, as selected by the Electrical Contractor. Note, all lamps for one project to be furnished by the same manufacturer unless otherwise specified. At the end of the project, the Electrical Contractor shall turn over to the Owner one lamp envelope from each type installed. The Contractor shall be responsible for replacing all lamps which burn out during construction and up to ninety (90) days after Owner occupancy of the building.
- F. VOLTAGE: As noted on the LIGHTING FIXTURE SCHEDULE. Contractor is responsible for field verifying available voltage(s) and ordering fixtures, ballasts, and transformers accordingly.
- G. ORDERING: It is solely the responsibility of the Contractor to order fixtures, lamps, mounting brackets and accessories so that the fixtures will be installed and operating upon Owner Occupancy opening. Contractor is responsible for all delays because of his/her lack of effort to order the products in a timely manner.

H. SHIPPING: The light fixture manufacturer shall mark the fixture type as indicated on the contract drawings and/or shop drawings on the respective carton when shipping luminaries. The Contractor shall be responsible for checking each carton immediately upon receipt for verification that fixtures are undamaged and no contents are missing. All discrepancies must be reported to shipper and manufacturer immediately; otherwise the Contractor shall be responsible for damaged.

2.03 WARRANTY

A. All light fixtures shall have a 5-year manufacturer's warranty. Warranty shall begin on date of substantial completion.

2.04 SUBSTITUTIONS

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Install fixtures in accordance with manufacturer's instructions.
- B. Mount fixtures in locations as shown on drawings and as called for in schedule on electrical drawings. Determine type of ceiling to be installed in each space from drawings and schedules and furnish fixtures suitable for the exact type.
- C. Joints in fixture wiring shall be made using wire nuts, pre-insulated Scotch locks, or other approved mechanical means of connection.
- D. Adjustable type fixtures shall be adjusted by the Contractor to illuminate intended area to satisfaction of the Engineer.
- E. Surface fixtures in or on plastered or drywall ceilings shall be supported from pieces of support channel spanning across main support channels and shall not depend on ceilings for support.
- F. Coordinate fixture locations to clear diffusers, ductwork, piping, etc.
- G. Maintain integrity of enclosures on all enclosed and gasketed fixtures. Minimize number of enclosure penetrations and make such penetrations water and dust tight with appropriate gasketing and fittings.
- H. Fixtures are to fit tight against construction to eliminate light leaks.
- I. Recessed downlights are to be provided with adjustable mounting bars/frames for drywall or lay-in ceilings as required. Fixtures shall be securely fastened to the ceiling framing member by mechanical means such as bolts, screws, rivets, or listed clips identified for use with the type of ceiling framing members and fixtures.
- J. Support recessed fixtures 2 foot x 2 foot and larger using a minimum of four independent wire hangers, one on each corner, of same gauge as ceiling suspension system supported from building structure independent of ceiling framing. Install earthquake clips to secure recessed grid-suspended luminaries in place.
- K. Wall-mounted fixtures shall be mounted plumb with building lines and installed with proper box and cover hardware.
- L. Surface-mounted fixtures are to cover mounting hardware. Use a canopy that is no longer than the length and width of the fixture and at a height that is no higher than required to mount the

fixture absolutely vertical. Fixtures shall be plumb and shall align with building lines and with each other. Support surface mounted luminaries on grid ceiling directly from building structure. Secure to prevent movement.

- M. Stem-mounted fixtures are to be mounted to be absolutely vertical or horizontal. Install suspended luminaries using pendants supported from swivel hangers or in accordance with details shown in drawings. Provide pendant length required to suspend luminaire at indicated height. Support stem-mounted fixtures directly from the building structure.
- N. Install recessed luminaries using accessories and firestopping materials to meet regulatory requirements for fire rating. In fire rated ceilings, recessed luminaries must carry one-hour UL fire rating classification.
- O. Install all accessories specified with each fixture. Install recessed luminaries to permit removal from below.
- P. Bond products and metal accessories to branch circuit equipment grounding conductor.
- Q. At completion of installation and before turning over to owner, clean and remove all dirt and smudges from all lighting fixtures including lenses, louvers and reflectors.
- R. Relamp luminaries that have failed at completion of project.

END OF SECTION

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Temporary generators for use during construction.

1.02 REFERENCES

- A. ANSI/NFPA 70 National Electric Code.
- B. New York City Electrical Code NYCEC.

1.03 SUBMITTALS

- A. Submit under provisions of Section 013300.
- B. Shop Drawings: Indicate locations where temporary electric service and/or generator(s) will be located and routed.

1.04 REGULATORY REQUIREMENTS

- A. Provide temporary power in accordance with NEC and NYCEC.
- B. Obtain required permits from authorities.
- C. Notify affected utility companies before starting work and comply with their require-ments.
- D. Do not close or obstruct egress width to exits.
- E. Do not turn off electric equipment without authorization from Owner and Engineer. Provide 72 hours advance notification minimum, unless otherwise noted on drawings and/or in the specifications.

1.05 SCHEDULING

A. Provide temporary electric generator in accordance with Maintenance of Building Operations requirements.

PART 2 - PRODUCTS

2.01 TEMPORARY GENERATOR

- A. Minimum of one (1) Temporary generator shall be available during the entire contract period when required by the Maintenance of Building operations.
- B. Temporary generators shall be installed and maintained per NEC,, NYCEC, OSHA, N.Y.C. Building Code and local code requirements.
- C. One (1) temporary generator shall be a minimum of 250KW @ 120/208 Volt 3Ø, 4 wire.
- D. All existing equipment shall be protected against damage caused by the installation, operation and removal of the temporary generator service. Any equipment or items damaged shall be replaced at no cost to the Owner.
- E. Provide portable sound-attenuated generators system for temporary electric service.

- F. Provide all necessary wire, cables and conduit for connection between portable gen-erator and equipment listed in the Maintenance of Building Operations and deemed necessary by the owner. Generators shall be configured to be automatically started and stopped.
 - 1. Provide all necessary fuel for operation. Generators shall be diesel powered.
 - 2. Coordinate with Owner for exact location of temporary generator.
 - 3. Provide and install a lockable fence enclosure to protect and secure generators from vandalism and theft.
 - 4. Upon completion of the project, remove all temporary electric light and power work and restore all affected finishes, connections and site work.

2.02 MINIMUM GENERATOR SYSTEM REQUIREMENTS

- A. The temporary engine generator shall start and provide continuous power to all of the existing site loads and loads required for construction purposes with 100 percent block loading at the time of transfer.
- B. The genset shall be trailer mounted with an integral sub base tank:
- C. The 250KW Genset shall be provided with diesel fuel tank sized for a minimum of 24 hour runtime based on loads being served.
- D. All gensets to be provided with an electronic governor.
- E. The fuel storage tank shall utilize double wall sub base containment.
- F. Strobe light to indicate low fuel level alarm
- G. Provide portable sound-attenuated generator system for temporary electric service. Sound level must not exceed 65 dBA at 50'.
- H. 110 VAC receptacle for use at low voltages
- I. Easy voltage selection: 120/240V, 120/208V, 277/480V
- J. Trailer shall be provided with out-riggers to provide security and remove load from trailer tires when genset is in stationary position.
- K. AC voltage and frequency meters, digital display panel, panel backlighting, Run-off-auto switch, self diagnostics, idle mode control, and voltmeter/ammeter phase selector switch.
- L. Overcurrent sensing, Voltage adjustment potentiometer.
- M. Provide all necessary wire, cables and conduit for connection between portable gen-erator and all electrical equipment.
- N. Provide a full tank of fuel with delivery of unit. Generator shall be diesel powered.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Verify existing system voltage characteristics and match to existing system voltage characteristics.
- B. Verify that the temporary service is sized to accommodate all loads.

C. Determine locations and routings for temporary electric wires, cables and conduits with Engineer and Owner.

3.02 TEMPORARY POWER

- A. Temporary wiring and power shall be installed so as not to be a hazard and shall be protected from damage. Separate circuits shall be provided for light and power. Over-current protective devices and switches shall be provided. All equipment, tools, metal cabinets and boxes shall be grounded.
- B. Disable existing power only to make final connections or when permanent service is to be installed.
- C. Temporary wires, cables and conduits shall be protected from damage and accessi-bility by unauthorized persons.
- D. Pay for all fuel and maintenance of unit during course of project. Power shall not be interrupted during any course of construction, except when transferring from existing source to temporary generator and back to new permanent source power. Power interruptions shall be limited to two (2) 20-minute durations and owner shall be notified a minimum of 72 hours before any power interruptions.
- E. Temporary Generator Plan:
 - 1. Contractor shall provide a minimum of one (1) 250 kw generator for the duration of any power outages in the building.
 - 2. For bidding, contractor shall assume 250 feet of temporary cable per phase, neutral, and ground will be required between the generator and load served.

END OF SECTION

APPENDIX ITEM NO. 1

ENVIRONMENTAL REPORT



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November 21, 2024

Email: cstabile@bnydc.org

Mr. Carmine A. Stabile Senior Vice President, Operations & Infrastructure Brooklyn Navy Yard Development Corporation 63 Flushing Avenue, Unit 300 Brooklyn, NY 11205

Re: Environmental Survey – Storm Resiliency Restoration of Substation at Building 275 Brooklyn Navy Yard 63 Flushing Avenue, Brooklyn, NY H2M Job No. BNYD1901A

Dear Mr. Stabile:

In accordance with your request, H2M architects + engineers (H2M) conducted a limited asbestos (ACM) and lead based paint (LBP) inspection of Building 275 at 63 Flushing Avenue, Brooklyn, NY 11205 provided herein are the results of our findings. The report was based on 100% Drawings by H2M titled Restoration of Substation at Building 275.

Asbestos Sampling

On July 9th of 2020, and February 11, 2024, H2M collected limited bulk samples of suspect asbestos containing materials (ACM) that were located at the above-mentioned property and are scheduled to be disturbed during the upcoming project. The materials sampled included various surfacing, miscellaneous, and thermal system insulation. Bulk samples were collected and submitted by New York State Department of Labor (NYS DOL) certified inspector Mr. Kyle P. Vander Schuyt (NYSDOL Cert. No. 12-11293). Mr. Vander Schuyt is also certified as an asbestos investigator by the New York City Department of Environmental Protection (NYCDEP Cert. No. 149351) and was assisted by Mr. Douglas B. Milne (NYSDOL Cert No. 13-14307) and Mr. Frank J. Acciarito (NYSDOL Cert No. 18-63276). On January 26, 2024, H2M returned to the site to perform additional samplings of suspect asbestos containing materials. Bulk samples were collected and submitted by New York State Department of Labor (NYS DOL) certified inspector Mr. No. 13-14307). Mr. Milne is also certified as an asbestos investigator by the New York City Department of Labor (NYS DOL) certified inspector Mr. Frank J. Acciarito (NYSDOL Cert No. 18-63276). On January 26, 2024, H2M returned to the site to perform additional samplings of suspect asbestos containing materials. Bulk samples were collected and submitted by New York State Department of Labor (NYS DOL) certified inspector Mr. Douglas B. Milne (NYSDOL Cert. No. 13-14307). Mr. Milne is also certified as an asbestos investigator by the New York City Department of Environmental Protection (NYCDEP Cert. No. 160491).

Asbestos Results

According to the federal Asbestos Hazard Emergency Response Act NESHAP (AHERA), the Occupational Safety and Health Administration (OSHA 1926.1101) and the NYSDOL (12 NYCRR Part 56); asbestos containing material (ACM) is defined as any material or product which contains greater than one percent (1%) of asbestos.

TABLE 1	: ASBESTOS BULK SAMPLE SU	JMMARY RES	ULTS TABLE
	BUILDING 275	5	
	63 FLUSHING AVENUE, BROC	OKLYN, NY 11	205
	MATERIAL DESCRIPTION/	RESULT	APPROXIMATE
LOCATION	SAMPLE HA #	FINDINGS	QUANTITY OF ACM
	Brick	Non-ACM	
Electrical Room	Brick Mortar	Non-ACM	
Electrical room	Miscellaneous Tar on Wall	Non-ACM	
	Lightweight Concrete Floor	Non-ACM	



Environmental Report – Storm Resiliency Building 275 63 Flushing Avenue Brooklyn, NY 11205 Page 2

TABLE 1	ASBESTOS BULK SAMPLE SU	JMMARY RES	ULTS TABLE
	BUILDING 275		
	63 FLUSHING AVENUE, BROC	OKLYN, NY 11	205
	MATERIAL DESCRIPTION/	RESULT	APPROXIMATE
LOCATION	SAMPLE HA #	FINDINGS	QUANTITY OF ACM
	Rubber Wires	Not	
Electrical Decare	Rubbel Wiles	Suspect	
Electrical Room	Fire Door Insulation	Non-ACM	
Side Room	12x12 Beige Floor Tiles	Assumed ACM	 Not being impacted by Scope of Work
Roof	Roof Materials	Assumed ACM	 Not being impacted by Scope of Work

Table Notes:

- 1. ACM = Asbestos Containing Material, contains more than 1% by weight in Bold.
- 2. Non-ACM = Contains $\leq 1\%$ or no asbestos detected in material samples.
- All quantities should be verified on site by the contractor prior to submitting a cost estimate or abatement notification/filings. H2M should be notified if there is a change in quantities or work scope.

Lead Based Paint Sampling

On July 9th of 2020, H2M collected paint chip samples of suspect lead-based paint from painted surfaces of Building 275 at 63 Flushing Avenue, Brooklyn, NY 11205. Sampling was performed by a US EPA Certified Lead Based Paint Inspector, Mr. Kyle P. Vander Schuyt (LBP-I-I173781-2).

Paint Chip samples were submitted to EMSL Analytical, Inc. (EMSL) of Carle Place, New York. EMSL is certified by the New York State Department of Health (NYSDOH), Environmental Laboratory Approval Program (ELAP), No. 11469 and EPA 7000B, AAS.

Lead Based Paint Results

According to the U.S. Environmental Protection Agency (US EPA) lead based paint is defined as paint containing equal to or more than 0.5% lead by weight in paint chip samples.

Interior	Electric Room	Metal Door and Door Frames	Gray	>0.5%	Assumed Lead Based Paint*
Interior/ 1	Vestibule Floor	Concrete	Blue	0.013 %	Lead Containing Paint*
Location / Sample #	Room/Component	Substrate	Color	% by Weight	Interpretation
	63 FLUSHING AVEN	UE, BROOK	LYN, NY	′ 11205	
	BUIL	DING 275			
TABLE 2	: LEAD PAINT BULK S	AMPLE SUN	IMARY	RESULTS TABL	E
containing equal to or mo					



TABLE 2: LEAD PAINT BULK SAMPLE SUMMARY RESULTS TABLE BUILDING 275 63 FLUSHING AVENUE, BROOKLYN, NY 11205 Location / Sample # Room/Component Substrate Color % by Weight

Table Notes:

- 1. Lead Based Paint (LBP) in Bold = EPA defined LBP or lead concentration equal to or above 0.5% by weight.
- 2. Lab detection reporting limit is 0.008%

* - Refer to OSHA 29 CFR 1926.62 for training and handling guidance of Lead Containing Materials (LCM) or incidentally impacted Lead Based Paint (LBP) during construction. Contractor must hold awareness training and reference OSHA 29 CFR 1926.62 and 29 CFR 1910 in working with LCM including proper housekeeping and PPE and disposal and waste characterization requirements.

Universal Waste in Light Fixtures

The federal universal waste regulations are found in Title 40 of the Code of Federal Regulations (CFR) in part 273 and apply to (4) four types of universal waste:

These are:

- Batteries, such as lead/acid, lead, nickel-cadmium, silver, lithium or mercury (Information on the Rechargeable Battery Recycling Act).
- Certain Pesticides, that would otherwise be a hazardous Waste
- Thermostats and other Mercury-Containing Equipment (MCE), (Additional information on thermostat management). MCE is included as Universal Waste by the NYC DEC Commissioners Policy 39, approved in 2006.
- Lamps, (except LED lamps which fall under a different category of e-waste) Fluorescent, Halogen, Incandescent and other lamps may be laden with a mercury coating.

In NYS the DEC references the "Universal Waste Rule" (UWR), 6 NYCRR Part 374-3, as an alternate way of managing certain types of hazardous wastes, otherwise they would be subject to all applicable requirements of Parts 370 through 374 and 376. Handlers may choose to manage eligible wastes under the UWR, or under ordinary hazardous waste regulations. A Universal Waste handler falls under one or more of the following: generates, receives, stores, accumulates, and/or sends universal waste. A universal waste Transporter is involved in the transportation of Universal waste with all the accreditations required by the DOT and DEC, in the state of New York.

Universal Waste, E-waste, and light fixtures potentially hazardous containing PCB ballasts; Thermostats and bulbs that may contain mercury; shall be properly disposed of in accordance with local and state regulations.



TABLE 3: UNIVERSAL WASTE SUMMARY TABLE BUILDING 275 63 FLUSHING AVENUE, BROOKLYN, NY 11205

Building Wing	Light Fixtures (Assumed Haz PCB Ballast)	Light Bulbs (Assumed Mercury)	Thermostats (Assumed Mercury)	Smoke Detectors	Emergency Lights
Electrical Room	4	8	1	1	0

Notes:

- Ballasts could not be opened and inspected, unless the existing ballast indicate "Non-PCB" on them they will be considered to contain PCB Dielectric fluid in Hazardous Waste levels.

- Incandescent and fluorescent bulbs are assumed to contain mercury and are to be recycled in accordance with EPA, Local waste disposal facility requirements and DOT transporting requirements.

Laboratory analytical data sheets and chain of custody forms are provided in Attachment 1. Copies of H2M's licenses and certifications are provided in Attachment 2. Copies of EMSL's certifications are provided in Attachment 3. Photographic documentation is provided in Attachment 4 / ACP5

H2M surveyed visible and accessible materials during this survey without destructive exploratory means. It is possible that concealed materials such as, but not limited to, Tar within façade brick wythes and foundations, Tar on concealed spandrels and relieving angles may exist. H2M certifies that the information contained herein is based on the physical data and visual inspections conducted by H2M and lab data collected during the inspection survey. All findings stated in this report are based upon facts and circumstances as they existed at the time of inspection and at the time that this report was prepared. A change in any of the site conditions, facts or circumstances upon which this report is based may affect the findings expressed in this report.

If you have any questions, please do not hesitate to contact the undersigned at (631) 756-8000 extension 1621.

Very truly yours, H2M architects + engineers

N. 14 F

Kyle P. Vander Schuyt Industrial Hygienist – Project Scientist

Douglas B. Milne Industrial Hygienist

Frank J. Acciarito Environmental Technician



ATTACHMENT 1

LABORATORY ANALYSIS & CHAIN OF CUSTODY FORM Please Reply To:



AmeriSci New York

117 EAST 30TH ST. NEW YORK, NY 10016 TEL: (212) 679-8600 • FAX: (212) 679-3114

LABORATORY ELECTRONIC TRANSMITTAL

To:	Kyle Vander Schuyt
	H2M Architects and Engineers
Fax #:	(631) 271-0787

From: Valeriu Voicu AmeriSci Job #: 224021447 Subject: ELAP-PLM-FRIABLE 5 day Results Client Project: 63 Flushing Avenue, Brooklyn, NY - Building 275

Email: kvanderschuyt@h2m.com, dmilne@h2m.com

Date: Sunday, February 11, 2024 Time: 10:24:14 Comments:

Number of Pages:

(including cover sheet)

NOTE: Attached report is to be considered preliminary until final review with accompanying analysis summary letter is issued.

CONFIDENTIALITY NOTICE: Unless otherwise indicated, the information contained in this communication is confidential information intended for use of the individual named above. If the reader of this communication is not the intended recipient, you are hereby notified that any dissemination, distribution or copying of this communication is prohibited. If you have received this communication in error, please immediately notify the sender by telephone and return the original message to the above address via the US Postal Service at our expense. Samples are disposed of in 60 days or unless otherwise instructed by the protocol or special instructions in writing. Thank you.

Certified Analysis

Service 24 Hours A Day • 7 Days A Week visit our web site - www.amerisci.com **Competitive Prices**



AmeriSci New York

117 EAST 30TH ST. NEW YORK, NY 10016 TEL: (212) 679-8600 • FAX: (212) 679-3114

PLM Bulk Asbestos Report

H2M Architects and Engineers Attn: Kyle Vander Schuyt 290 Broad Hollow Road Suite 400E Melville, NY 11747

Date Received	02/06/24	AmeriSc	i Job) #	224021447
Date Examined	02/11/24	P.O. #			
ELAP #	11480	Page	1	of	1
RE: 63 Flushing A	venue, Brook	klyn, NY - Βι	uildin	g 275	

Client No. / HGA	A Lab No.	Asbestos Present	Total % Asbestos
1-1	224021447-01	No	NAD
1	Location: Building 275 Mechanical Room - Fire	Door Insulation	(by NYS ELAP 198.1) by Valeriu Voicu on 02/11/24
Asbestos Typ	tion:Brown, Homogeneous, Fibrous, Bulk Materia pes: rial: Cellulose 97%, Non-fibrous 3% 224021447-02	No	NAD
1-2	224021447-02	NO	NAD
1	Location: Building 275 Mechanical Room - Fire	Door Insulation	(by NYS ELAP 198.1) by Valeriu Voicu on 02/11/24
Analyst Descript Asbestos Typ	tion:Gray, Homogeneous, Fibrous, Bulk Material		0.1.02/11/21
	rial: Cellulose 98%, Non-fibrous 2%		

Reporting Notes:

Analyzed by: Valeriu Voicu Date: 2/11/2024

Reviewed by: Valeriu Voicu

*NAD/NSD = no asbestos detected; NA = not analyzed; NA/PS=not analyzed/positive stop, (SOF-V) = Sprayed On Fireproofing containing Vermiculite; (SM-V) = Surfacing Material containing Vermiculite; PLM Bulk Asbestos Analysis using Olympus, Model BH-2 Pol Scope, Microscope, Serial #: 229915, by Appd E to Subpt E, 40 CFR 763 quantified by either CVES or 400 pt ct as noted for each analysis (NVLAP 200546-0), ELAP PLM Method 198.1 for NY friable samples, which includes the identification and quantitation of vermiculite, or ELAP 198.6 for NOB samples, or EPA 400 pt ct by EPA 600-M4-82-020 (NY ELAP Lab 11480); Note:PLM is not consistently reliable in detecting asbestos in floor coverings and similar non-friable organically bound materials. NAD or Trace results by PLM are inconclusive, TEM is currently the only method that can be used to determine if this material can be considered or treated as non asbestos-containing in NY State (also see EPA Advisory for floor tile, FR 59,146,38970,8/1/94) National Institute of Standards and Technology Accreditation requirements mandate that this report must not be reproduced except in full without the approval of the lab.This PLM report relates ONLY to the items tested. RI Cert AAL-094, CT Cert PH-0186, Mass Cert AA000054, NJ Lab ID #NY031.

_END OF REPORT___

H2	M L50	Site Addres	shing An	ence /	Brooklyn, NY			Date Submitted:
ddress:		Work Area	ling 27	5				Turn Around Time:
4 th F	Hollow Road loor East , NY 11747	Send Samp EMSL Man	les to	E-mail Res	ults to: @H2M.com		-	Number of Samples:
nalytical Proced Circle One)	ure: NY ELAP Method (friable in NY)		_AP Method 19 on-friable-NY)		AP Method 198.4 (TEM)	EPA 600/R-9 Metho	3/166 d	BILling # BNYD190
Sample Number	L	ocation			Sample Descri			Comments
1-1	Building	275 M.	echanical	Fire	Door Insu	lation		
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Relinguished by (s	ilit	2/5/2 Date	Time		Received by (signatu	26	4/4/2 Date	Agent of:

 PLEASE STOP AT 1ST POSITIVE
 **

 EMSL 528 Mineola Ave, Carle Place, NY 11514 Phone (516) 997-7251 Fax (516) 997-7528

EMSL	EMSL Analytical, Inc. 528 Mineola Avenue Carle Place, NY 11514 Tel/Fax: (516) 997-7251 / (516) 997-7528 http://www.EMSL.com / carleplacelab@emsl.com	EMSL Order: Customer ID: Customer PO: Project ID:	H2ML50
Attention:	Kyle Vanderschuyt	Phone:	(631) 756-8000
	H2M Architects and Engineers	Fax:	
	538 Broad Hollow Road	Received Date:	07/27/2020 9:15 AM
	4th Floor East	Analysis Date:	07/31/2020
	Melville, NY 11747	Collected Date:	
Project:	Brooklyn Navy Yards, Bldg 275, Bldg 275, Boiler/Electrical Rm		

Test Report: Asbestos Analysis of Bulk Material

		Analyzed		Non-As	bestos	
т	est	Date	Color	Fibrous	Non-Fibrous	Asbestos
Sample ID	1-1		Description	Boiler/Electrical Rm - Brick		
	062013647-00	001	Homogeneity	Homogeneous		
PLM NYS 1	98.1 Friable	07/31/2020	Brown/ Red		5.00% Ca Carbonate 25.00% Non-fibrous (other) 70.00% Quartz	None Detected
PLM NYS 1	98.6 VCM					Not Analyzed
PLM NYS 1	98.6 NOB					Not Analyzed
TEM NYS 1	98.4 NOB					Not Analyzed
Sample ID	1-2		Description	Boiler/Electrical Rm - Brick		
	062013647-00	002	Homogeneity	Homogeneous		
PLM NYS 1	98.1 Friable	07/31/2020	Gray/ Red		5.00% Ca Carbonate 20.00% Non-fibrous (other) 75.00% Quartz	None Detected
PLM NYS 1	98.6 VCM					Not Analyzed
PLM NYS 1	98.6 NOB					Not Analyzed
TEM NYS 1	98.4 NOB					Not Analyzed
Sample ID	2-1		Description	Boiler/Electrical Rm - Brick M	ortar	
	062013647-00	003	Homogeneity	Homogeneous		
PLM NYS 1	98.1 Friable	07/31/2020	Gray/ Tan		25.00% Ca Carbonate 6.00% Mica 9.00% Non-fibrous (other) 60.00% Quartz	None Detected
PLM NYS 1	98.6 VCM					Not Analyzed
PLM NYS 1	98.6 NOB					Not Analyzed
TEM NYS 1	98.4 NOB					Not Analyzed
Sample ID	2-2		Description	Boiler/Electrical Rm - Brick M	ortar	
	062013647-00	004	Homogeneity	Homogeneous		
PLM NYS 1	98.1 Friable	07/31/2020	Gray/ Tan		30.00% Ca Carbonate 5.00% Mica 10.00% Non-fibrous (other) 55.00% Quartz	None Detected
PLM NYS 1	98.6 VCM					Not Analyzed
PLM NYS 1	98.6 NOB					Not Analyzed
TEM NYS 1	98.4 NOB					Not Analyzed



EMSL Analytical, Inc.

528 Mineola Avenue Carle Place, NY 11514 Tel/Fax: (516) 997-7251 / (516) 997-7528 http://www.EMSL.com / carleplacelab@emsl.com
 EMSL Order:
 062013647

 Customer ID:
 H2ML50

 Customer PO:
 BNYD1901A

 Project ID:

Test Report: Asbestos Analysis of Bulk Material

	Analyzed		N	on-Asbestos	
Test	Date	Color	Fibrous	Non-Fibrous	Asbestos
Sample ID 3-1		Description	Boiler/Electrical Rm - M	lisc. Tar on Wall	
062013647-00	005	Homogeneity	Heterogeneous		
PLM NYS 198.1 Friable					Not Analyzed
PLM NYS 198.6 VCM					Not Analyzed
PLM NYS 198.6 NOB	07/31/2020	White/ Black		100.00% Other	Inconclusive: None Detected
EM NYS 198.4 NOB	07/31/2020	White/ Black		100.00% Other	None Detected
Sample ID 3-2		Description	Boiler/Electrical Rm - M	lisc. Tar on Wall	
062013647-00	006	Homogeneity	Heterogeneous		
PLM NYS 198.1 Friable					Not Analyzed
PLM NYS 198.6 VCM					Not Analyzed
PLM NYS 198.6 NOB	07/31/2020	White/ Black		100.00% Other	Inconclusive: None Detected
EM NYS 198.4 NOB	07/31/2020	White/ Black		100.00% Other	None Detected
Sample ID 4-1		Description	Boiler/Electrical Rm - L.	Weight Concrete Floor	
062013647-00	007	Homogeneity	Homogeneous		
PLM NYS 198.1 Friable	07/31/2020	Gray/ Tan/		30.00% Ca Carbonate	None Detected
		Various		6.00% Mica 4.00% Non-fibrous (other)	
				60.00% Quartz	
PLM NYS 198.6 VCM					Not Analyzed
PLM NYS 198.6 NOB					Not Analyzed
TEM NYS 198.4 NOB					Not Analyzed
Sample ID 4-2		Description	Boiler/Electrical Rm - L.	Weight Concrete Floor	
062013647-00	008	Homogeneity	Homogeneous		
PLM NYS 198.1 Friable	07/31/2020	Gray/ Tan/		35.00% Ca Carbonate	None Detected
		Various		5.00% Mica	
				5.00% Non-fibrous (other) 55.00% Quartz	
PLM NYS 198.6 VCM					Not Analyzed
PLM NYS 198.6 NOB					Not Analyzed
TEM NYS 198.4 NOB					



 EMSL Order:
 062013647

 Customer ID:
 H2ML50

 Customer PO:
 BNYD1901A

 Project ID:

Test Report: Asbestos Analysis of Bulk Material

The samples in this report were submitted to EMSL for analysis by Asbestos Analysis of Bulk Materials via NYS ELAP Approved Methods. The reference number for these samples is the EMSL Order ID above. Please use this reference number when calling about these samples.

Report Comments:

Sample Receipt Date: 7/27/2020 Analysis Completed Date: 7/31/2020 Sample Receipt Time: 9:15 AM Analysis Completed Time: 1:15 PM

Analyst(s):

Oca PLM NYS 198.1 Friable (6) Fomas Montes De

0____

Jackson Li TEM NYS 198.4 NOB (2)

Samples reviewed and approved by:

matic Mamrattan - Scaralls

Omatie Ramrattan-Scarallo PLM NYS 198.6 NOB (2)

h

Daniel Clarke, Asbestos Laboratory Manager or Other Approved Signatory

NOB = Non Friable Organically Bound N/A = Not Applicable VCM = Vermiculite Containing Material

-In New York State, TEM is currently the only method that can be used to determine if NOB materials can be considered or treated as non-asbestos containing. All samples examined for the presence of vermiculite when analyzed via NYS 198.1.

-NYS Guidelines for Vermiculite containing samples are available at http://www.wadsworth.org/labcert/elapcert/forms/VermiculiteInterimGuidance_Rev070913.pdf EMSL maintains liability limited to cost of analysis. This report relates only to the samples reported above and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. Samples were received in good condition unless otherwise noted.

This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government. This report may contain data that is not covered by the NVLAP accreditation.

Samples analyzed by EMSL Analytical, Inc. Carle Place, NY NYS ELAP 11469

Initial report from: 07/31/2020 17:25:59

OrderID: 062013647

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l2M architects + eng	ineers , Bulk Sl	neet and Chain of Custody	PageOF
H2M L50		·	
ddress:	Work Area	Navy Yards, Bldg 275 Bldg 275, Boiles /Flect	Turn Around Time:
538 Broad Hollow 4 th Floor Eas	t Fax Results f	o: $ E-mail Results to:$	rica (Km Lweek Number of Samples:
Melville, NY 117	747	KVanderSchuyt@H2M.	
nalytical Procedure: Circle One)	Y ELAP Method 198.1 (friable in NY)	NY ELAP Method 198.6 NY ELAP Metho (non-friable (TEM) (TEM)	Billing # BNYD 1901 A
Sample Number	Location	Sample Descripti	on Comments
-1 Bc	lec/Electrical	Ron Brick	
-2			
24	1	Brick Mortar	
2-2			
3~1		Misc. Tar on 1	Wall
5-2			
		L. Weight Conc	cata Finar
-2			
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	I		VIN
		-100	1077
<u>n</u>	I		
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	Date 7-9-2	Time Received by (signature)	Agenter 5/
elinguistical by staroatare	17-9-2	1020	Date Agent of:
THE	Date Date	Received by (signature)	
	Date	Time Received by (signature) +CP a + <i>FLTS</i> + <i>P011</i> ace, NY 11514 Phone (516) 997-7257 ge 1 Of 1 TEM-	, , , , , , , , , , , , , , , , , , ,

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Test Report: Lead in Paint Chips by Flame AAS (SW 846 3051A/7000B)*

Client Sample Description	Lab ID	Collected	Analyzed	Lead Concentration
1 06	2013689-0001	7/9/2020	8/1/2020	0.013 % wt
S	ite: Vestibule /	Floor / Cond	rete / Blue	

Alger Liang, Lead Laboratory Manager or other approved signatory

EMSL maintains liability limited to cost of analysis. Interpretation and use of test results are the responsibility of the client. This report relates only to the samples reported above, and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. The report reflects the samples as received. Results are generated from the field sampling data (sampling volumes and areas, locations, etc.) provided by the client on the Chain of Custody. Samples are within quality control criteria and met method specifications unless otherwise noted.

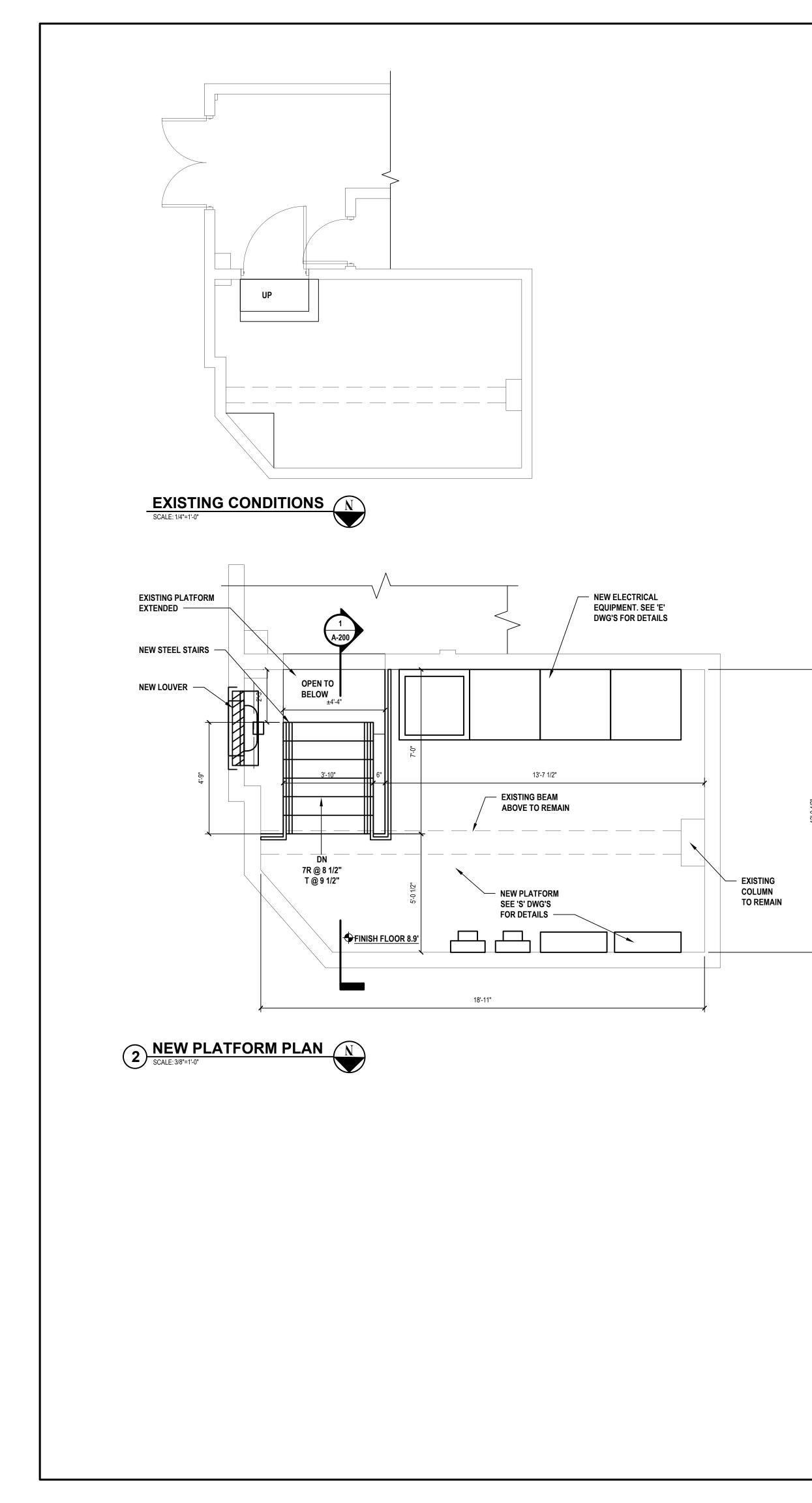
Analysis following Lead in Paint by EMSL SOP/Determination of Environmental Lead by FLAA. Reporting limit is 0.008% wt based on the minimum sample weight per our SOP. "<" (less than) result signifies the analyte was not detected at or above the reporting limit. Measurement of uncertainty is available upon request. Definitions of modifications are available upon request. Samples analyzed by EMSL Analytical, Inc. Carle Place, NY Lab ID 102344 is accredited by AIHA LAP, LLC in the env. accreditation program for Lead in Paint, CT PH-0249, NYS ELAP 11469, CA 2339

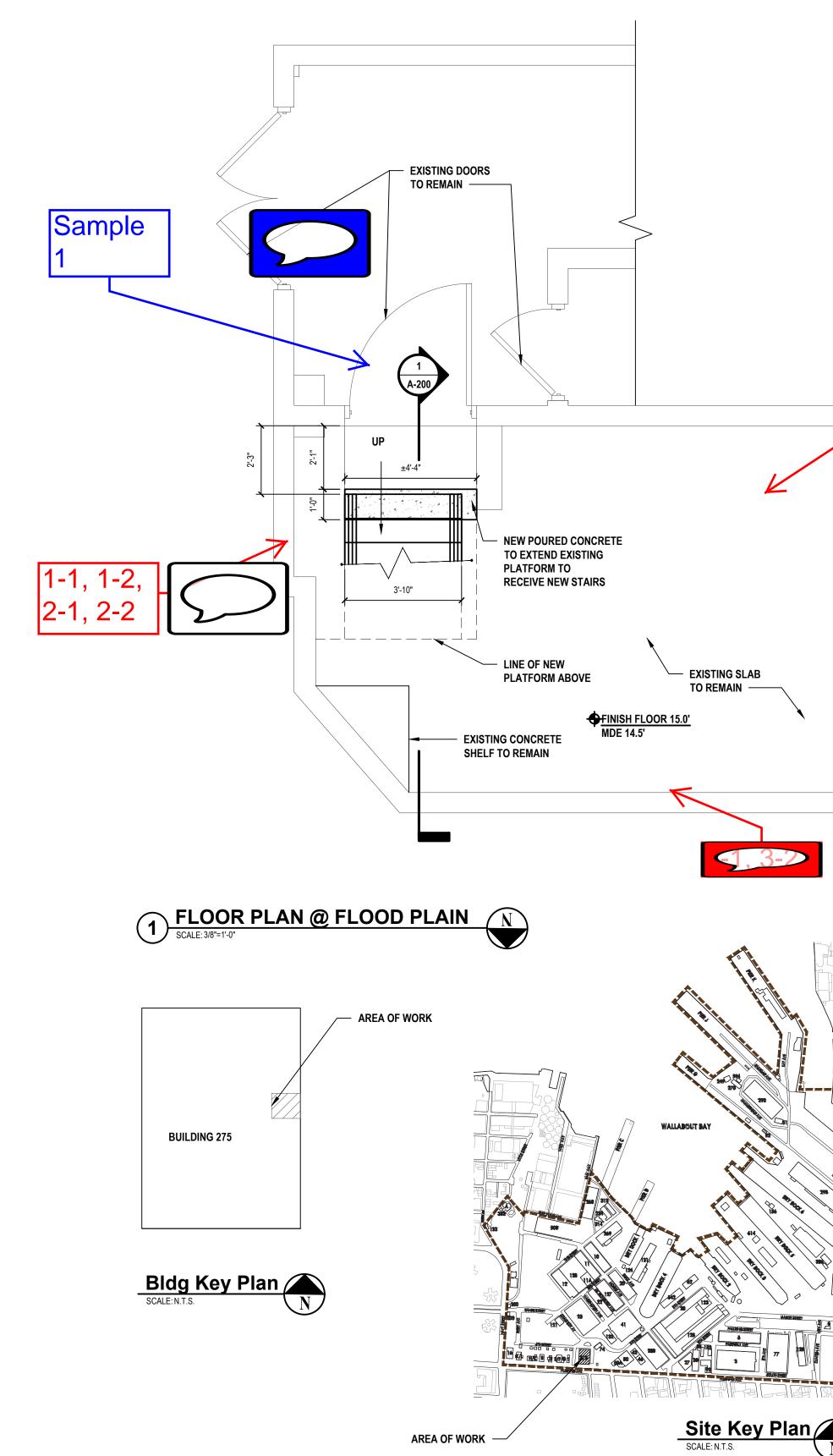
Initial report from 08/01/2020 12:40:33

EMSL		Lead (Pb) Cl EMSL Order		-		4
EMSL ANALYTICAL, INC.		Óca	<u>ol'</u>	3689		
Company : H2ML50				EMSL-Bill to: Sill to: Sill to is Different note ins		
Street:				ird Party Billing requires writte	n authorization from third p	arty
City:		Province: NY	Zip/Posta	al Code:	Country:	
Report To (Name): KYL			Telephor	ne #:		
Email Address: KVAN		M.COM	Fax #:		Purchase Order	:
Project Name/Number		190 <i>1</i> H		rovide Results: 📋 Fax	Email	. =
U.S. State Samples Ta		arnaround Time (TA		les: 🔲 Commercial/Taxal		<u>c Exempt</u>
3 Hour 6		TRAT 48 Hour		2 Hour 96 Hour	1 Week	2 Week
	*Analysis complete		L's Terms a	nd Conditions located in the Pr	ice Guide	· · · · ·
Matrix		Method		Instrument	Reporting Limit	Check
Chips 🔳 % by wt. 🔲	mg/cm² 🔲 ppm	SW846-7000E	3	Flame Atomic Absorption	0.01%	×
Air		NIOSH 7082		Flame Atomic Absorption	4 µg/filter	
		NIOSH 7105		Graphite Furnace AA	0.03 µg/filter	
		NIOSH 7300 modified		ICP-AES/ICP-MS	0.5 µg/filter	
Wipe*	ASTM	SW846-7000B SW846-6010B or C		Flame Atomic Absorption	10 µg/wipe	
*if no box is checked,		SW846-5010B or C SW846-7000B/7010		Graphite Furnace AA	1.0 µg/wipe 0.075 µg/wipe	
TCLP		SW846-1311/7000B/SM 3111B		Flame Atomic Absorption	0.4 mg/L (ppm)	
		SW846-1131/SW846-6010B or C		ICP-AES	0.1 mg/L (ppm)	
Soil		SW846-7000B		Flame Atomic Absorption	40 mg/kg (ppm)	
		SW846-7010 SW846-6010B or C		Graphite Furnace AA ICP-AES	0.3 mg/kg (ppm) 2 mg/kg (ppm)	
		SM3111B/SW846-7000B		Flame Atomic Absorption	0.4 mg/L (ppm)	
Wastewater Unpr Preserved with HNO	eserved □ ₃pH < 2 □	EPA 200.9		Graphite Furnace AA	0.003 mg/L (ppm)	
	-	EPA 200.7			0.020 mg/L (ppm)	
Drinking Water Unput Preserved with HNO		EPA 200.9 EPA 200.8		Graphite Furnace AA	0.003 mg/L (ppm) 0.001 mg/L (ppm)	
	<u>3Pii</u>	40 CFR Part 5	i0	ICP-AES	12 µg/filter	
TSP/SPM Filter		40 CFR Part 5	i0	Graphite Furnace AA	3.6 µg/filter	
Other:						
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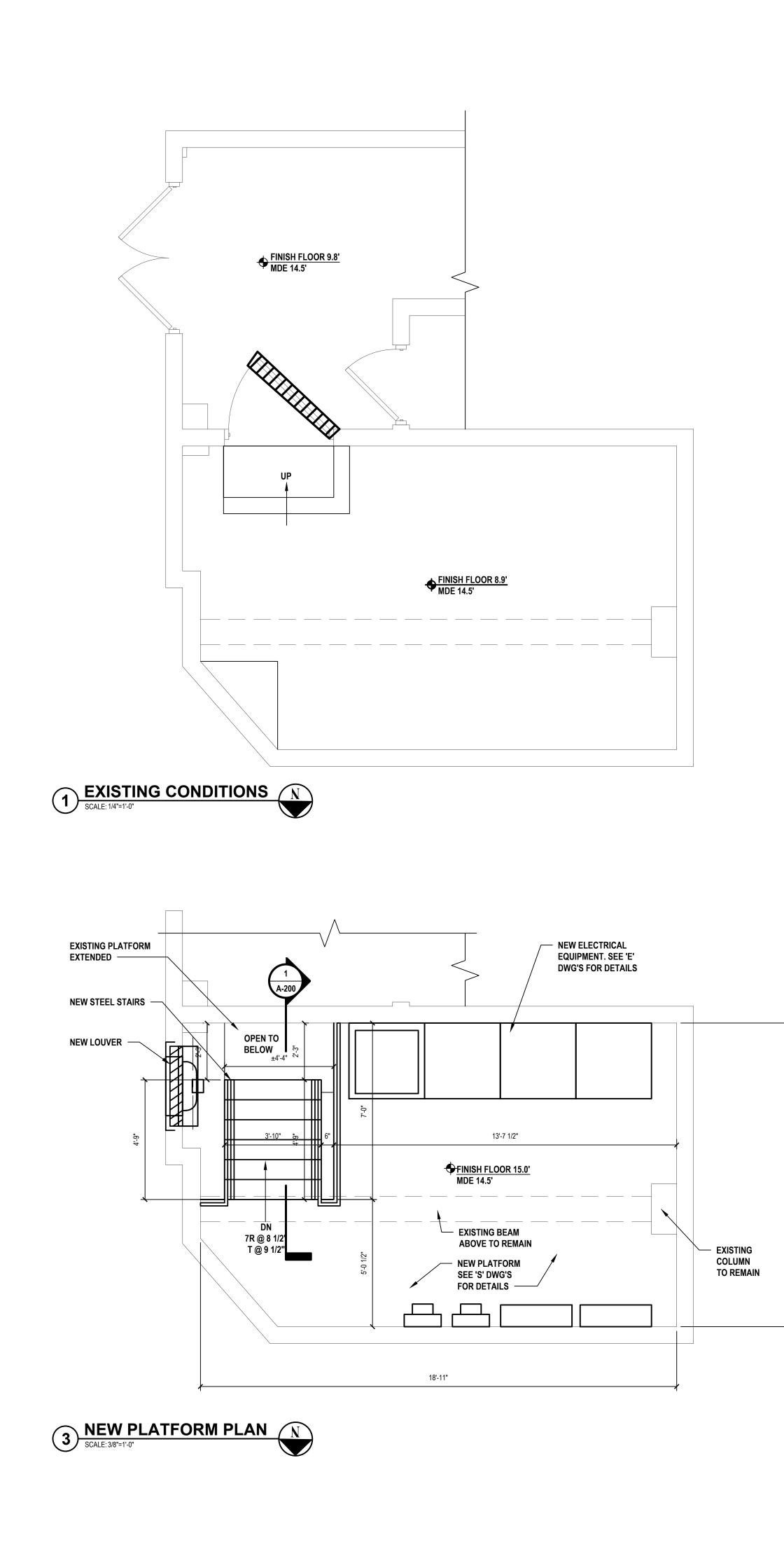
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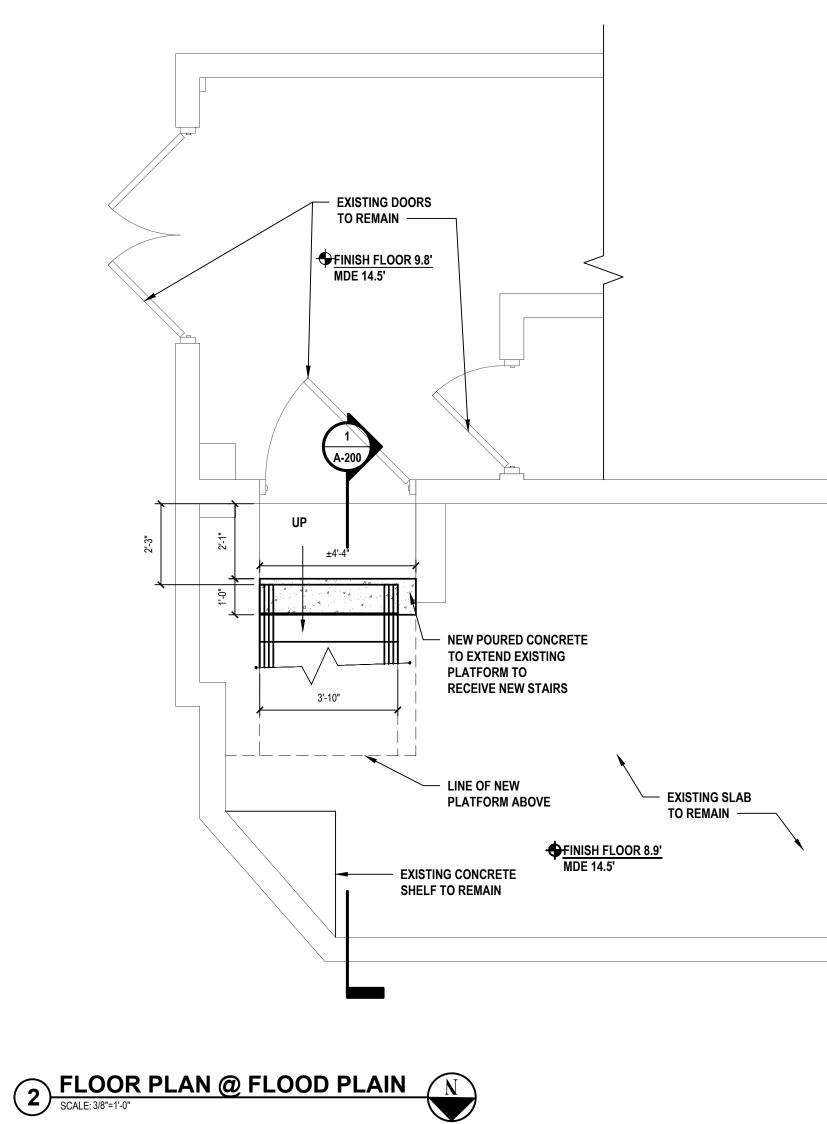


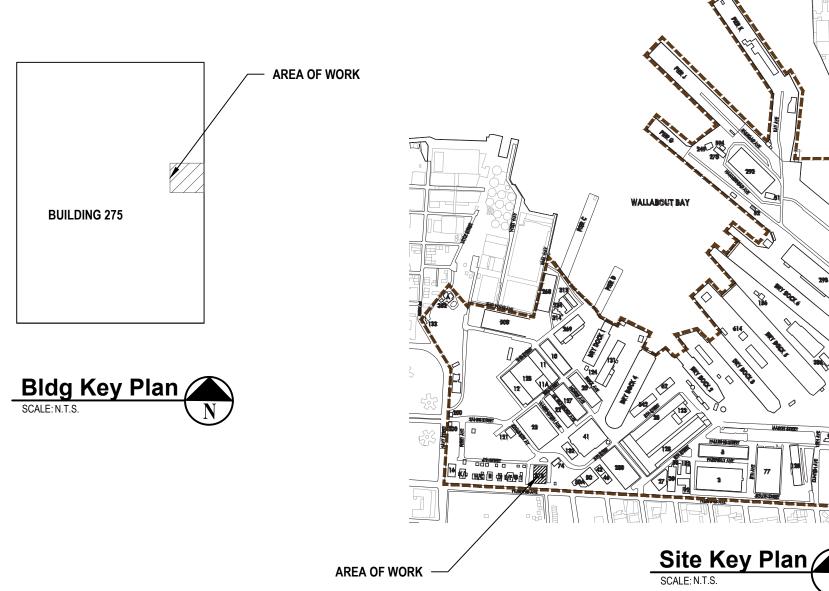


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		CONSULTANTS:			
		MARK	DATE	DESCRI	PTION
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		DESIGNED BY: LAM PROJECT No.: BNYD 190	DRAWN BY: LAM DATE:	CEPT BY A LICENSED PROFESSIONAL IS CHECKED BY: DBER 2019	REVIEWED BY:
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LOCATION OF ASSUMED ASBESTOS	CONTAINING FIRE DOOR INSULATION	architects + engineers
		31 Penn Plaza, 132 W 31st Street, Suite 604 New York, NY 10001 646.518.6300 ▪ www.h2m.com
		CONSULTANTS:
		MARK DATE DESCRIPTION
EXISTING COLUMN TO REMAIN		11-08-2019 Submitted to Client
		"ALTERATION OF THIS DOCUMENT EXCEPT BY A LICENSED PROFESSIONAL IS ILLEGAL" DESIGNED BY: DRAWN BY: CHECKED BY: REVIEWED BY: LAM LAM ° PROJECT NO.: DATE: SCALE: BNYD 1901 DATE: OCTOBER 2019 AS SHOWN
		Development Corporation
HAZARDOUS MATERIAL 1. FOR ANY LEAD CONTAINING MATERIALS AND PLEASE SEE REPORT AND SPECIFICATIONS.		Restoration of Substation at Building 275
		M\cadd_H&MSTDS\Client_Logos\BNYD\BNY Mono Logo Write backgroundLjpg
		63 Flushing Avenue, Suite 300 Brooklyn, NY 11205
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		STATUS 90% SUBMISSION
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	JOB STICKER PLACED HERE	DRAWING No. H-101.00 OF 19



ATTACHMENT 2

H2M'S PERSONNEL LICENSES AND CERTIFICATIONS

New York State – Department of Labor

Division of Safety and Health License and Certificate Unit State Campus, Building 12 Albany, NY 12240

ASBESTOS HANDLING LICENSE

H2M Architects, Engineers, Land Surveying and Landscape Architecture, D.P.C. 4th Floor East 538 Broad Hollow Road

M

Melville, NY 11747

FILE NUMBER: 00-0724 LICENSE NUMBER: 28582 LICENSE CLASS: RESTRICTED DATE OF ISSUE: 12/11/2020 EXPIRATION DATE: 12/31/2021

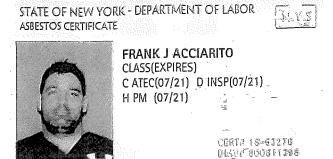
Duly Authorized Representative – Debra Mattina:

This license has been issued in accordance with applicable provisions of Article 30 of the Labor Law of New York State and of the New York State Codes, Rules and Regulations (12 NYCRR Part 56). It is subject to suspension or revocation for a (1) serious violation of state, federal or local laws with regard to the conduct of an asbestos project, or (2) demonstrated lack of responsibility in the conduct of any job involving asbestos or asbestos material.

This license is valid only for the contractor named above and this license or a photocopy must be prominently displayed at the asbestos project worksite. This license verifies that all persons employed by the licensee on an asbestos project in New York State have been issued an Asbestos Certificate, appropriate for the type of work they perform, by the New York State Department of Labor.

SH 432 (8/12)

Eileen M. Franko, Director For the Commissioner of Labor



MUST BE CARRIED ON ASBESTOS PROJECTS

HEREIGER CHEREICER .

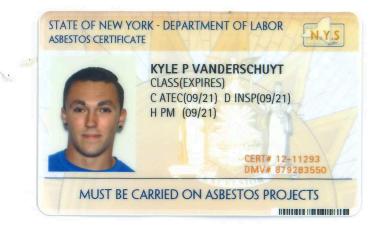


EYES HAZ HAIR BLK HGT 5' 08"

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NYSDOL - LEC UNIT ROOM 161A BUILDING 12 STATE OFFICE CAMPUS ALBANY NY 12240





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	KYLE
-	149351
-	EXPIRES: 09/21/2022
	DOB:09/21/1993 M 6' 00"

EYES BRO HAIR BRO HGT 6' 01"

01213 004912433 23

IF FOUND RETURN TO: NYSDOL - L&C UNIT ROOM 161A BUILDING 12 STATE OFFICE CAMPUS ALBANY NY 12240



DMV ID: 879283550

This certificate must be shown to a NYCDEP representative upon request. Report loss immediately to NYCDEP Asbestos Control Program, 8th floor 59-17 Junction Blvd., Flushing, NY 11373

United States Environmental Protection Agency

This is to certify that

H2M Architects + Engineers

has fulfilled the requirements of the Toxic Substances Control Act (TSCA) Section 402, and has received certification to conduct lead-based paint activities pursuant to 40 CFR Part 745.226

In the Jurisdiction of:

All EPA Administered Lead-based Paint Activities Program States, Tribes and Territories

This certification is valid from the date of issuance and expires July 07, 2022

LBP-1482-2

Certification #

May 13, 2019

Issued On



The Proc

Michelle Price, Chief Lead, Heavy Metals, and Inorganics Branch

United States Environmental Protection Agency This is to certify that

Kyle P Vander Schuyt



has fulfilled the requirements of the Toxic Substances Control Act (TSCA) Section 402, and has received certification to conduct lead-based paint activities pursuant to 40 CFR Part 745.226 as:

Inspector

In the nf:

All EPA Administered Lead-based Paint Activities Program States, Tribes and

Territories This certification is valid from the date of issuance and expires

March 17, 2023

LBP-I-I173781-2

Certification #

February 21, 2020

Issued On

Susan Schulz, Acting Chief Chemicals and Multimedia Programs Branch



ATTACHMENT 3

EMSL'S CERTIFICATIONS



Certificate of Accreditation to ISO/IEC 17025:2017

NVLAP LAB CODE: 101048-10

EMSL Analytical, Inc.

Carle Place, NY

is accredited by the National Voluntary Laboratory Accreditation Program for specific services, listed on the Scope of Accreditation, for:

Asbestos Fiber Analysis

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communique dated January 2009).

2020-07-01 through 2021-06-30

Effective Dates



For the National Voluntary Laboratory Accreditation Program



SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017

EMSL Analytical, Inc.

528 Mineola Ave. Carle Place, NY 11514 Daniel Clarke Phone: 516-997-7251 Email: dclarke@emsl.com http://www.emsl.com

ASBESTOS FIBER ANALYSIS

NVLAP LAB CODE 101048-10

Bulk Asbestos Analysis

<u>Code</u>	<u>Description</u>
18/A01	EPA 40 CFR Appendix E to Subpart E of Part 763, Interim Method of the Determination of Asbestos in Bulk Insulation Samples
18/A03	EPA 600/R-93/116: Method for the Determination of Asbestos in Bulk Building Materials

Airborne Asbestos Analysis

Code **Description**

18/A02

U.S. EPA's "Interim Transmission Electron Microscopy Analytical Methods-Mandatory and Nonmandatory-and Mandatory Section to Determine Completion of Response Actions" as found in 40 CFR, Part 763, Subpart E, Appendix A.

For the National Voluntary Laboratory Accreditation Program

NEW YORK STATE DEPARTMENT OF HEALTH WADSWORTH CENTER



Expires 12:01 AM April 01, 2021 Issued April 01, 2020

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

MR. DANIEL CLARKE EMSL ANALYTICAL, INC. 528 MINEOLA AVE. CARLE PLACE, NY 11514

NY Lab Id No: 11469

is hereby APPROVED as an Environmental Laboratory in conformance with the National Environmental Laboratory Accreditation Conference Standards (2003) for the category ENVIRONMENTAL ANALYSES SOLID AND HAZARDOUS WASTE All approved analytes are listed below:

Characteristic Testing

TCLP

EPA 1311

Metals I

Lead, Total

Sample Preparation Methods

EPA 3051A

EPA 7000B

Department of Health

Serial No.: 61401

Property of the New York State Department of Health. Certificates are valid only at the address shown, must be conspicuously posted, and are printed on secure paper. Continued accreditation depends on successful ongoing participation in the Program. Consumers are urged to call (518) 485-5570 to verify the laboratory's accreditation status.



NEW YORK STATE DEPARTMENT OF HEALTH WADSWORTH CENTER



Expires 12:01 AM April 01, 2021 Issued April 01, 2020

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

MR. DANIEL CLARKE EMSL ANALYTICAL, INC. 528 MINEOLA AVE. CARLE PLACE, NY 11514

NY Lab Id No: 11469

is hereby APPROVED as an Environmental Laboratory for the category ENVIRONMENTAL ANALYSES SOLID AND HAZARDOUS WASTE All approved subcategories and/or analytes are listed below:

Miscellaneous

Asbestos in Friable Material

Asbestos in Non-Friable Material-PLMItem 198.6 of ManualAsbestos in Non-Friable Material-TEMItem 198.4 of ManualAsbestos-Vermiculite-Containing MaterialItem 198.8 of ManualLead in Dust WipesEPA 7000BLead in PaintEPA 7000B

Item 198.1 of Manual EPA 600/M4/82/020 Item 198.6 of Manual (NOB by PLM) Item 198.4 of Manual Item 198.8 of Manual EPA 7000B EPA 7000B

Department of Health

Sample Preparation Methods

EPA 3051A

Serial No.: 61402

Property of the New York State Department of Health. Certificates are valid only at the address shown, must be conspicuously posted, and are printed on secure paper. Continued accreditation depends on successful ongoing participation in the Program. Consumers are urged to call (518) 485-5570 to verify the laboratory's accreditation status.



ATTACHMENT 4

PHOTOGRAPHIC DOCUMENTATION AND NYC DEP ASBESTOS ACP5

Environment Protection	5	DEPARTMENT OF E Asbestos 59-17 Junction Bouleva ASBESTOS AS	s Control Prog rd, 8th Floor, I	ram ⁻lushing, N∖	′ 11373	J	ASBE	ECEIVEE /14/2024 DEP stos cont program FEE PAID	
1. NYC DOB Jo	ob # (if applicable)				(Control	Numbe	er: 3115	5529
2. Premise No.	63 Street M	Name Flushing Aven	ue	Boroug	h Brookly	yn	Zip <u>1</u>	1205	
3. AKA Build	ing 275	Type of Facility Comme	rcial BIN	3335129	_ Block _0	2023	_ Lot _	0001	_
4. Building Owr	ner Brooklyn Navy	Yard A	ddress 63	Flushing	Avenue				
5. City Brook	lyn S	State <u>NY</u> Zip 112	05 Contact	Person Ca	rmine Sta	bile			
6. Tel. # _(718	8) 907–5919 F	ax#		Email <u>CS</u>	TABILE@BN	YDC.OR	5		
7. Work Type _	General Construct:	ion							
Building 2		Vork eplace the existing o e room (replace door				rent roc	m to a	higher	
8. I, DOUGLAS	MILNE e of Certified Asbestos Investig	, have condu	icted an asbe	stos investig	ation on				
	024 12:00PM-1:30PM							in accor	dance
		Date(NYC DEP Asbestos Co	,						
was no b. pren Spec X c. asbe is pr	a asbestos-containing m nise (or portions thereof cify locations in section estos is present and will esent. Specify amount:	s) of the premises, include aterials (ACM) present) affected by the work co 9: Note: This material must be not be disturbed during of <u>160</u> sq. ft <u>1</u> restos containing materia	ntains 10 squ abated as a mino construction a 0	are feet or lo r project in acco activity. Spec	ess or 25 lin ordance with re	ear feet c levant provis	or less o sions of th	f ACM. e DEP Asb	estos Rules.
9. RESULTS (OF ASBESTOS BUILDI	NG SURVEY:							
Floor	Section of Floor(s) Surveyed	Material Assumed to Contain ACM and/or Sampled	Number of Samples Analyzed	Asbestos Present	Assumed ACM	Square Feet	Linear Feet	Abated	Scope of Work Applied
Ground Floor	Electrical Room	Brick	2	No	No				
Ground Floor	Electrical Room	Brick Mortar	2	No	No			and an about the	
DEP Certified As DEP Certified As Tel. # (631) Email DMILN The investigator assumed to cor	TINE sbestos Investigator's Signatur 392-5229 Fax ; E@H2M.COM r shall assume that some or all itain ACM, collect and submit f	ovided herein is true an 2/14/2024 Date # of the areas investigated conta for analysis bulk samples in acc 50/5-85-030a	160491 Certificate Numb-	er Expi each area that is -36, 1-37, and	not C 1-44 of the A	EAL F THE PC DEP ERTIFIED SBESTOS IVESTIGATO	BES	AS 8 0491 5705 IN	ALL REAL
ls it a Build-It	-Back project?	s, App ID #					10018		
2/14/2024 2:46	:56 PM					Pa	ge 1 of 2	ACP5 10	//2018



NYC DEPARTMENT OF ENVIRONMENTAL PROTECTION

Asbestos Control Program 59-17 Junction Boulevard, 8th Floor, Flushing, NY 11373 ASBESTOS ASSESSMENT REPORT

	~~~	
	RECEIVED	1
	2/14/2024	
AS	DEP BESTOS CONTROL PROGRAM	•
		1

FEE PAID

Ground Floor	Electrical Room	Miscellaneous Tar on Wall	2	No	No			
Ground Floor	Electrical Room	Lightweight Concrete Floor	2	No	No			
Ground Floor	Electrical Room	Fire Door Insulation	2	No	No			
Roof	Above Electrical Room	Roof Materials	0	No	Yes	100	No	с
Ground Floor	Side Room	12"x12" Beige Floor Tiles	0	No	Yes	60	No	C

#### **10. ANALYTICAL LABORATORY:**

NAME	ELAP # (NYS DOH CERTIFICATION)	DATE(S) SAMPLES ANALYZED		
AmeriSci	11480	2/11/2024		
EMSL	11469	2/11/2024		
11. NYS DOL Asbestos Handling license # 28582	Company Name	H2M Architects, Engineers, Land Surveying and Land		

12.Comment

	I hereby declare the information prov	ided herein is true	e and complete		AL CLAS B. MINH	
Q.	DOUGLAS MILNE	2/14/2024	160491	2/12/2025		1
	DEP Certified Asbestos Investigator's Signature	Date	Certificate Number	Expiration Date		¢
	Tel. # (631) 392-5229 Fax # _					
	Email DMILNE@H2M.COM				SEAL OF THE	<u>]</u>
	The investigator shall assume that some or all of assumed to contain ACM, collect and submit for a DEP Asbestos Rules and EPA publications 560/5	analysis bulk samples in	accordance with §§ 1-36, 1-	ea that is not C 37. and 1-44 of the A	AND A STATE AND A	
	Is it a Build-It-Back project? Yes,	App ID #	X No		251210018	

2/14/2024 2:46:56 PM

Page 2 of 2 ACP5 10/2018



architects + engineers

Brooklyn Navy Yard - Building 275



Building 275 Electrical Room



Electrical Room: Non-asbestos containing miscellaneous tar on wall.



Electrical Room: Non-asbestos containing lightweight concrete floor.



Electrical Room: Non-asbestos containing brick and brick mortar.





Electrical Room: Lead containing blue paint over concrete floor in vestibule.

Building 77 141 Flushing Ave, Suite 801 Brooklyn, NY 11205

# EXHIBIT N ADDITIONAL M/WBE PROVISIONS

#### A. Pre-award waiver of the Participation Goals.

- 1. A Bidder may seek a pre-award full or partial waiver of the Participation Goals in accordance with Section 6-129, which requests that BNYDC change the Participation Goal on the grounds that the Participation Goal is 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.
- 2. To apply for a full or partial waiver of the Participation Goal, a bidder must complete Part B of Exhibit O and submit such request no later than seven (7) calendar days prior to the date and time the bids are due, in writing to the BNYDC by email at <u>lblackwood@bnydc.org</u> and <u>mwbe@bnydc.org</u>. Full or partial waiver requests that are received later than seven (7) calendar days prior to the date and time the bids are due may be rejected as untimely. Bidders who have submitted timely requests will receive a BNYDC response by no later than two (2) calendar days prior to the due date for bids; provided, however, that if that date would fall on a weekend or holiday, a BNYDC response will be provided by close-of-business on the business day before such weekend or holiday date.
- 3. If BNYDC determines that the Participation Goal is 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.
- 4. BNYDC may grant a full or partial waiver of the Participation Goal to a bidder who demonstrates—before submission of the bid— that it has legitimate business reasons for proposing the level of subcontracting in its M/WBE Utilization Plan. In making its determination, BNYDC shall consider factors that shall include, but not be limited to, whether the bidder 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 Goal. In making such determination, BNYDC may consider whether the bidder has made efforts to form a joint venture with a certified firm, and whether the bidder has made good faith efforts to identify other portions of the Contract that it intends to subcontract.

#### **B. Modification of M/WBE Utilization Plan**.

 A Contractor may request a modification of its M/WBE Utilization Plan (a "<u>Modification</u>") after award of this Contract. BNYDC 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 Goal. In making such determination, BNYDC shall consider evidence of the following efforts, as applicable, along with any other relevant factors:

Building 77 141 Flushing Ave, Suite 801 Brooklyn, NY 11205

- a. The Contractor advertised opportunities to participate in the Contract, where appropriate, in general circulation media, trade and professional association publications and small business media, and publications of minority and women's business organizations;
- b. The Contractor provided notice of specific opportunities to participate in the Contract, in a timely manner, to minority and women's business organizations;
- c. The Contractor sent written notices, by certified mail or facsimile, in a timely manner, to advise MBEs or WBEs that their interest in the Contract was solicited;
- d. The Contractor made efforts to identify portions of the work that could be substituted for portions originally designated for participation by MBEs and/or WBEs in the M/WBE Utilization Plan, and for which the Contractor claims an inability to retain MBEs or WBEs;
- e. The Contractor held meetings with MBEs and/or WBEs prior to the date their bids were due, for the purpose of explaining in detail the scope and requirements of the work for which their bids were solicited;
- f. The Contractor made efforts to negotiate with MBEs and/or WBEs as relevant to perform specific subcontracts, or act as suppliers or service providers;
- g. Timely written requests for assistance made by the Contractor to BNYDC's M/WBE liaison officer at <u>mwbe@bnydc.org</u> and to DSBS and DMWBD;
- h. Description of how recommendations made by DSBS, DMWBD and BNYDC 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.

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

2. BNYDC may modify the Participation Goal when the scope of the work has been changed by BNYDC 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.

## C. Substitutions

Substitutions to the MBEs and/or WBEs that Contractor identified as firms they intended to use in connection with the performance of the Contract may only be made with the approval of BNYDC, which shall only be given when the Contractor has proposed to use a firm that would satisfy the Participation Goal to the same extent as the firm previously identified, unless BNYDC determines that the Contractor has established, with appropriate documentary and other evidence, that it made reasonable, good faith efforts. In making such determination, BNYDC shall require evidence of the efforts listed in Section B(1) above, as applicable, along with any other relevant factors.

## **D. Indefinite Quantity Contracts**

If this Contract is for an indefinite quantity of construction or is a requirements type contract and the Contractor has submitted an M/WBE Utilization Plan and has committed to subcontract work to

Building 77 141 Flushing Ave, Suite 801 Brooklyn, NY 11205

MBEs and/or WBEs in order to meet the Participation Goal, 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 BNYDC has determined that such work is not needed.

## E. Progress Review, Evaluation and Assessment

At least once annually during the term of the Contract, BNYDC 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.

BNYDC 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.

## F. Miscellaneous Provisions

- 1. The Contractor shall take notice that the resulting contract may be audited. Furthermore, such resulting contract may also be examined by the City's Comptroller to assess compliance with its M/WBE Utilization Plan.
- 2. DSBS and DMWBD are available to assist contractors and potential contractors in determining the availability of MBEs and/or WBEs to participate as subcontractors, and in identifying opportunities that are appropriate for participation by MBEs and/or WBEs in contracts.
- 3. Prospective contractors are encouraged to enter into qualified joint venture agreements with MBEs and/or WBEs as defined by Section 6-129(c)(30).
- 4. By submitting a bid the Contractor hereby acknowledges its understanding of the M/WBE Program requirements set forth herein, and if awarded this Contract, the Contractor hereby agrees to comply with the M/WBE Program requirements of this Contract, 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.

## **G. Enforcement**

- 1. If BNYDC determines that a bidder has, in relation to this procurement, violated the M/WBE Program requirements of this Contract, BNYDC may disqualify such bidder from competing for this Contract and BNYDC may revoke such bidder's prequalification status, if applicable.
- 2. Whenever BNYDC believes that the Contractor or a subcontractor is not in compliance with the M/WBE Program or its M/WBE Utilization Plan, BNYDC shall send a written notice to the Contractor describing the alleged noncompliance and offering the Contractor an opportunity to be heard. BNYDC 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 the M/WBE Program or

Building 77 141 Flushing Ave, Suite 801 Brooklyn, NY 11205

its M/WBE Utilization Plan, BNYDC 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 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;
- 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 the Contractor has been found to have failed to fulfill its Participation Goals contained in its M/WBE Utilization Plan or the Participation Goal as modified by BNYDC pursuant to Section B of this Exhibit N, BNYDC 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 Goal 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 BNYDC will suffer by reason of Contractor's failure to meet the Participation Goal, the foregoing amount is hereby fixed and agreed as the liquidated damages that BNYDC will suffer by reason of such failure, and not as a penalty. BNYDC 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 Contractor shall be less than the amount of liquidated damages suffered by BNYDC, the Contractor shall be liable to pay the difference.
- 5. Whenever BNYDC 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)), BNYDC shall notify the Commissioner of DSBS or DMWBD, as applicable, who shall determine whether the certification of such business enterprise should be revoked.

Building 77 141 Flushing Ave, Suite 801 Brooklyn, NY 11205

- 6. Statements made in any instrument submitted to BNYDC pursuant to the M/WBE Program 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 the M/WBE Program 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 BNYDC determines that a Contractor's compliance with an M/WBE Utilization Plan has been unsatisfactory, BNYDC shall, after consultation with the BNYDC M/WBE liaison officer, file an advice of caution form for inclusion in PASSPort as caution data.



Building 77 141 Flushing Ave, Suite 801 Brooklyn, NY 11205

# EXHIBIT O M/WBE UTILIZATION PLAN

[to attach]

#### EXHIBIT O

## M/WBE Utilization 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)

**Project name:** Restoration of Building 275 Indoor Substation **Total MWBE Participation Goal for this Project:** <u>30%</u>

## PART A

Section 1: Prime Contractor Contact Information					
Tax ID#		_			
FMS Vendor ID#		_			
Business Name		_			
Business Name Contact Person					
Business Address		_ City	State	ZIP	_
Telephone	Email				

## Section 2: M/WBE Utilization Goal Calculation

## Prime Contractor Adopting M/WBE Participation Goals

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

Total Bid/Proposal Value \$ _____

multiplied by x

Total Participation Goal <u>30</u> % for this IFB

Calculated M/WBE Participation Amount \$ _____

#### Section 3: Contractor M/WBE Utilization Plan

Please review the IFB 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 Calculated M/WBE Participation Amount set forth in Section 2. 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 Calculated M/WBE Participation Amount set forth in Section 2. 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 Calculated M/WBE Participation Amount set forth in Section 2.

#### **Section 4: General Contract Information**

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. For all M/WBE subcontractors listed below, please also include as attachments to this M/WBE Utilization Plan, a printout of the certification by DSBS or DMWBD given to such subcontractor.

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?  $\underline{$ 

	Description of Work	Start Date	End Date	Planned	-	nated for WBE?	Vendor Name	Address	Telephone
			(MM/YY)		Y	N			
1				\$					
2				\$					
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 BNYDC; 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 BNYDC, to meet the modified Participation Goals by soliciting and obtaining the participation of certified MBE and/or WBE firms.

Signature	Date
Print Name	Title
	IIIle

#### **REQUEST OF WAIVER OF M/WBE PARTICIPATION REQUIREMENTS**

PART B – To be completed ONLY if requesting a full or partial waiver of the M/WBE Participation requirements. This waiver request must be submitted at least 7 calendar days prior to the Bid Submission Deadline.

Section 1. Contractor Contact Information

Tax ID#		_			
FMS Vendor ID#		_			
Business Name					
Business Name Contact Person					
Business Address		City	State	ZIP	
Telephone	Email				
Bid Due Date					

#### Section 2. Basis for Waiver Request

#### Check appropriate box & explain in detail below (attach additional pages if needed)

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

□ Vendor subcontracts some of this type of work but at a lower % than bid/solicitation describes, and has the capacity and good faith intention to do so on this contract. Identify your subcontracting plan in Section 4, Vendor Certification below.

□ vendor has other legitimate business reasons for proposing the M/WBE Participation Goal requested here.

Explain below (or on additional pages, as needed)

#### Section 3. Vendor Contract History

#### **Vendor Contract History**

Defense 4

List all contracts (for City and Non-City work) performed within the last 3 years below (attach additional pages if needed) and provide the requested information for each contract.

From the list of all contracts, provide reference information below for the 5 most relevant contracts in size, scale and scope (performed for New York City or any other entity) to the bid or proposal for which you are submitting this waiver request. Provide the requested information for each subcontract awarded during the life of the listed reference contract.

Please make sure to highlight the 5 reference contracts provided below among the comprehensive list of all your contract awards.

Reference			
Agency/Organization		Contract #	
Reference Contact	Telephone	Email	

Contract Start Date		Contract End Date		Total Contract Value	\$
Prime Contract description	n				
Did the vendor perform as	s a Prime Contractor or as a	Subcontractor?	Prime Contractor	Subcontractor	
Was the Prime Contract s	subject to any Goals?	City M/WBE Goals	s 🔄 State Goals	E Federal Goals	No Applicable Goals
Did the Prime Contractor	meet Goal requirements?	🗌 Yes 🗌 No	o 🗌 N/A		
If the Prime Contractor did	not meet Goal requirements	or contract is still ongoi	ng, please explain		
If you performed as					\$
the Prime Contractor,					- \$
please provide a description and					_ \$
value of all work					\$\$
subcontracted to other vendors.					\$
other vehdors.					_ \$
					\$\$
					\$
			ge of total contract value subco		s <u>%</u>
If you performed as the s	Subcontractor, please provid	de a description and vai	ue of work areas you self-perfo	rmea.	_ \$
Reference 2					
Agency/Organization				Contract #	
Reference Contact		Telep	hone	Email	
Contract Start Date		Contract End Date		Total Contract Value	\$
Prime Contract description	n				
Did the vendor perform a	s a Prime Contractor or as a	Subcontractor?	Prime Contractor	Subcontractor	
Was the Prime Contract s		City M/WBE Goals		 ☐ Federal Goals	No Applicable Goals
Did the Prime Contractor	meet Goal requirements?		o 🗌 N/A		
If the Prime Contractor did	not meet Goal requirements	s or contract is still ongoi	ing, please explain		
If you performed as					\$
the Prime Contractor,					\$
					_ ¥
					_ ¥
					-

please provide a description and		\$
value of all work		\$
subcontracted to other vendors.		\$
other vendors.		\$
		\$
		\$
		\$
	Percentage of total contract value subcontracted to other vendors	%

\$

If you performed as the Subcontractor, please provide a description and value of work areas you self-performed.

#### **Reference 3**

Agency/Organization			Contract #	
Reference Contact	Telephone_		Email	
Contract Start Date	Contract End Date		Total Contract Value \$	
Prime Contract description				
Did the vendor perform as a Prime Contractor or as	a Subcontractor?	Prime Contractor	Subcontractor	
Was the Prime Contract subject to any Goals?	City M/WBE Goals	State Goals	Federal Goals	No Applicable Goals
Did the Prime Contractor meet Goal requirements?	🗌 Yes 🗌 No	□ N/A		
If the Prime Contractor did not meet Goal requireme	ents or contract is still ongoing,	please explain		
				\$
the Prime Contractor, please provide a				\$
				\$
				\$
subcontracted to				\$
				\$
				\$
				\$
				\$
	Percentage of to	otal contract value subcon	tracted to other vendors	%

If you performed as the Subcontractor, please provide a description and value of work areas you self-performed.

				\$
Reference 4			Combroat #	
Agency/Organization				
Contract Start Date	Contract End Date		Total Contract Value \$	
Prime Contract description				
Did the vendor perform as a Prime Contracto Was the Prime Contract subject to any Goals Did the Prime Contractor meet Goal requirem If the Prime Contractor did not meet Goal req	?     City M/WBE Goals       ents?     Yes     No	<ul> <li>Prime Contractor</li> <li>State Goals</li> <li>N/A</li> <li>please explain</li> </ul>	Subcontractor	No Applicable Goals
If you performed as the Prime Contractor, please provide a description and value of all work subcontracted to other vendors.	Percentage of to	tal contract value subcont	racted to other vendors	\$ \$ \$ \$ \$ \$ %
If you performed as the Subcontractor, pleas \$	se provide a description and value of v		med.	
Agency/Organization			Contract #	
Reference Contact				
Contract Start Date				
Prime Contract description				
Did the vendor perform as a Prime Contracto Was the Prime Contract subject to any Goals Did the Prime Contractor meet Goal requirem If the Prime Contractor did not meet Goal requirem	?	<ul> <li>Prime Contractor</li> <li>State Goals</li> <li>N/A</li> <li>please explain</li> </ul>	<ul> <li>Subcontractor</li> <li>Federal Goals</li> </ul>	No Applicable Goals
If you performed as the Prime Contractor, please provide a				\$ \$ \$

description and value of all work		\$			
subcontracted to		\$_			
other vendors.		\$_			
	Percentage of total contract value subcontracted to other vendors	_	%		
If you performed as the Subcontractor, please provide a description and value of work areas you self-performed.					
		\$			

#### Section 4. Vendor Certification

Identify/list all the work areas you intend on subcontracting on the current anticipated contract for which you are submitting this waiver request.

I hereby affirm that the information supplied in support of this waiver request is true and correct, and that this request is made in good faith. I further affirm that the work that I did not list as work that will be subcontracted on this contract for which I am submitting this waiver request is work that I have performed on past contracts and will not subcontract if awarded this contract.

Signature_____

Date_____

Print Name_____ Title_____